THE SOCIO-POLITICAL AND REGULATORY CONTEXT FOR SEA BED MINING IN PAPUA NEW GUINEA

DEEP SEA MINING CAMPAIGN

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AUTHOR: Helen Rosenbaum
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COVER PHOTO: Children of Molot village in Ramuaina (Duke of York Islands)
- will sea bed mining destroy their future? Photo: Helen Rosenbaum

Deep Sea Mining Campaign

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ABBREVIATIONS

BRG	Bismark Ramu Group
BSP	Bank of the South Pacific
CSIRO	Commonwealth Science and Industry Research Organisation
CSR	Corporate Social Responsibility
CEPA	Conservation and Environment Protection Authority
DEC	Department of Environment and Conservation
DCD	Development Coordination Division
DoY	Duke of York Islands
DPE	Department of Petroleum and Energy
DSM	Deep Sea Mining
DSP	Development Strategic Plan
EMMP	Environmental Management and Monitoring Plan
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EITI	Extractive Industries Transparency Initiative
ENB	East New Britain
ENBPG	East New Britain Provincial Government
ENBSEK	East New Britain Social Action Committee
GDP	Gross Domestic Product
INA	Institute of National Affairs
ISA	International Seabed Authority
LLG	Local Level Government
MoA	Memoranda of Agreements
MoU	Memorandum of Understanding
MP	Member of Parliament
MRA	Mineral Resources Authority
MSV	Mining Support Vessel
NFA	National Fisheries Authority
NIP	New Ireland Province
NIPG	New Ireland Provincial Government
PM	Prime Minister
PNG	Papua New Guinea
RALS	Riser and Lift System
ROV	Remote Operated Vehicle
SBM	Sea Bed Mining
SMS	Sea-floor Massive Sulphides
UNCLOS	United Nations Convention on the Law of the Sea
UPNG	University of Papua New Guinea
WBCA	Wide Bay Conservation Association
WCPO	Western and Central Pacific Ocean

EXECUTIVE SUMMARY

INTRODUCTION

With a population of around 7.3 million spread across a mountainous mainland and approximately six hundred islands, Papua New Guinea (PNG) faces many geographic and cultural challenges. Life for around 85% of Papua New Guineans is still based in remote villages with poor access to health services, education and paid employment opportunities. Local economies rely on subsistence and small cash-crop agriculture and fisheries.

PNG is mineral rich and mining contributes more than 50% of PNG's GDP, as well as royalties and employment. However, PNG's infrastructure remains poorly developed. Topography and large distances combine with corruption to hold back the country's development.

Two key cultural norms the *'bigman'* and the *'wantok'* system undermine PNG's progress. The bigman has tribal roots but now describes politicians and businessmen who maintain power by looking after those whose support they require. The pidgin term wantok translates to 'one talk'. Today it encompasses a wide network of people that may share language, geography, kinship, or other personal connections. The wantok system can result in debilitating expectations of financial assistance. Bigmen provide many privileges to themselves and their wantoks - at the expense of basic services and economic development. Thus, PNG has been rated as a "fragile state" for over a decade.

Weak governance and institutions provides an ideal environment for companies evading public scrutiny and rigorous environmental regulation. It is no surprise that the world's first sea bed mine received its license here.

RESOURCE GOVERNANCE

Policy and Legislation

The PNG Constitution provides a framework for environmental governance with its fourth goal *"natural resources and environment to be conserved and used for the collective benefit of us all, and be replenished for the benefit of future generations".*

The PNG National Strategic Plan - "Papua New Guinea Vision 2050" - sets a course for PNG to develop and build a solid and sustainable economic foundation and is supported by the Development Strategic Plan (DSP, 2010-2030) and the Medium-Term Strategic Plan (MTDS, 2016-2020).

A review of the Mining Act and the Mineral Resources Authority Act is underway to bring it line with the DSP and several new policies have been submitted to the National Government, including an Offshore Mining Policy. The extent to which environmental sustainability will be addressed by the new policies and laws, remains to be seen, as does the ability to implement them in the face of corruption and poor departmental capacity.

The Solwara 1 Project was issued with its environmental permits and 20 year mining lease in the absence of a legislative and regulatory framework for sea bed mining and without policies or laws that offer recourse to formal processes, or protection for affected parties from the impacts of SBM. This situation leaves maritime communities and marine oriented businesses (such as fisheries and tourism) very vulnerable. This is especially so, given the experimental nature of SBM described below.

Policies and legislation to manage the marine environment and its various uses are scattered across portfolios with little collaboration between departments and limited capacity to implement them. The most comprehensive set of instruments occurs in the fisheries sector. Thus many stakeholders had expected the National Fisheries Authority (NFA) to protect the interests of maritime communities at risk from Solwara 1. Interviewees expressed disappointment that instead of being a key player, the NFA was "missing in action", "dysfunctional" or "politically controlled".

There appears to be gaps in legislation with regard to: the protection of the biodiversity of PNG's seas;

recognising and preserving access rights and livelihoods of artisanal fishers; protecting the rights of commercial fisheries; regulating access by foreign companies to PNG's genetic resources and ensuring fair benefit sharing arrangements; trans-boundary pollution and the contamination of migratory species such as tuna and whales.

However, the Customs Recognition Act (Section 5) of the PNG Constitution confers rights to traditional owners over water, reefs, **and seabed**. This section states:

custom may be taken into account in relation to. . . the ownership by custom of rights in, over or in connection with the sea or a reef; or in or on the bed of the sea or of a river or lake, including rights of fishing; or the ownership by custom of water, or of rights in, over or to water (see National Assembly of Papua New Guinea, 1975).

Principal 5 of the PNG constitution recognizes PNG Ways as a guide to PNG's development aspirations.

Regulation

Significant challenges to governance are posed by the PNG Government's conflict of interest as both regulator and joint venture partner in Solwara 1. The situation is further complicated by the fact that that the Environment Minister at the time of writing, John Pundari, was previously the mining minister who issued Solwara 1 with its operating licence.

In addition, the regulatory agencies relevant to SBM, the Conservation and Environment Protection Authority (CEPA) and the Mineral Resources Authority (MRA), appear more concerned with expediting projects than safeguarding the interests of Papua New Guineans. Both agencies are financed by via cost recovery from resource projects. Thus, both agencies have a financial interest in facilitating rather than screening or delaying projects to ensure that adequate protections are in place. Moreover, it was reported that the human resource capacity of the CEPA is low: that good staff have left due to their disillusionment at the political control over their work.

The CEPA and MRA interviewees appeared unconcerned about the impacts of Solwara 1 and disinterested in critically analysing the information provided to them by Nautilus. Rather, they were happy to repeat it as fact, despite its simplistic nature and the company's obvious vested interest.

Despite this approach to Solwara 1¸ the MRA has engaged in progressive initiatives to improve the environmental and social standards of mines operating in PNG, including actively participating in the Extractive Industries Transparency Initiative (EITI). It has carried EITI principles though to the draft Mining Act - with provisions to increase the financial transparency of Memoranda of Agreements (MoAs) and improve the accountability of all signatories.

ECONOMICS OF SOLWARA 1

Financial and Environmental Risks

Nautilus faces significant technological and financial uncertainties which may result in the company terminating its proposed operations. In addition, Nautilus admits it is yet to demonstrate that seafloor resource development is commercially viable and environmentally sustainable.

The Nautilus Annual Information forms highlight the potential for equipment damage, mechanical failure and operational failure and warn that the projected yields and costs for Solwara 1 should be viewed with a low level of confidence. the company has insufficient funds to complete, test and deploy the Seafloor Production System and Nautilus advises there can be no assurance that additional finance will be obtained.

According to Nautilus's 2015 Annual Information Form, Nautilus has not completed and does not intend to complete a preliminary economic assessment, pre-feasibility study or feasibility study before embarking on mining at the Solwara 1 Site. "Management considers the Company's best interests would be served by first testing the operational viability of the Seafloor Production System at the Solwara 1 Project ..." The Form also acknowledges that the impact of any SBM operation on the environment will also only be determined by such testing.

These admissions formally confirm what community organisations have asserted for some time, that Nautilus and the PNG Government are using the Bismarck Sea as their testing ground and that Solwara 1 is indeed Experimental Sea Bed Mining.

Lack of Due Diligence

The PNG Government has acquired a 15% share in Solwara 1 through the State Nominee, Petromin's wholly owned subsidiary, Eda Kopa (Solwara) Ltd. This arrangement appears to have been established to enable the National Government to avoid breaching sovereign debt laws.

As described above, the business case for Solwara 1 is extremely weak and the risks for the Government of PNG are very high. The business plan was not assessed by PNG Treasury.

Independent reviews of the EIS and the information gained through this research further illustrate that environmental risks have not been sufficiently identified and factored into the National Government's decision making.

In entering into a 15% joint partnership arrangement with Nautilus, and by licensing Solwara 1, the PNG Government has chosen to ignore the environmental and financial risks associated with the project.

Furthermore, Solwara 1 will generate limited revenue and limited opportunities for employment and business. The direct shipping of ore to China may facilitate transfer pricing arrangements thus reducing the tax payable to PNG.

Intellectual property rights over equipment and methodology appear to have been a significant motivation to the National and Provincial governments to participate in the Solwara 1. However, these are yet unproven and may not perform in situ.

THE PROVINCIAL LANDSCAPE

With the Solwara 1 site located between New Ireland Province (NIP) and East New Britain Province (ENBP), these two provinces are important players. However provincial government stakeholders downplay their significance by emphasizing that the Organic Law delegates authority to the National Government to make decisions regarding resource projects. They assert that licensing decisions are imposed on their administrations, leaving them no option but to maximize the opportunities that can be gained for their provinces.

However, the reality is more complex. There appears to be scope for provincial governments to block development as illustrated by the moratorium introduced by the NIPG on logging, new land based mining and new SBM exploration. It would appear that at provincial level, corruption combines with a cultural acceptance of bigman top-down decision making to facilitate the Solwara 1 project.

The dynamics of government in NIP was likened by interviewees to a "dictatorship" or "kingdom", whilst ENB is governed through a structure where the Governor and Provincial Administrator both play key roles and do appear to take advice from deputy administrators. In both governments there appears to be some openness to discussing the costs and benefits of Solwara 1 and the possibility of a moratorium.

In both provinces, civil society is characterised by strong voices against Solwara 1. In both, people under-utilise Local Level Governments (LLGs) to represent their concerns to the Provincial Governments, and the LLG representatives are unsure of their roles and responsibilities. In Madang Province, communities mobilised to strongly voice their opposition to SBM which resulted in Nautilus not progressing its exploration leasehold there.

CONSULTATION AND BENEFITS

Managing Community Opposition

Nautilus has conducted two joint community consultations annually since 2008 with national and provincial government departments. The consultations, which are a condition of their lease, are co-funded by Nautilus and the National Government and facilitated by the MRA.

To date, the consultations have focused on the Namatanai region of west coast of NIP, closest to the Solwara 1 site. Public forums have also been held in the towns of Kokopo (ENBP) and Kavieng (NIP). There is much overlap between the focus area for the consultations and the Coastal Area of Benefit on the NIP west coast.

The Coastal Area of Benefit is the area in NIP defined by Nautilus for the delivery of its Corporate Social Responsibility (CSR) projects. It encompasses the LLG ward closest to the Solwara 1 site and 3 neighbouring wards. Household surveys have determined the nature of the CSR projects to be delivered.

Nautilus claims to have surveyed over 1500 households and that 88% of respondents have indicated their support for Solwara 1. However, our research reveals that villagers felt pressured to support the project out of fear they would be excluded from benefits if they didn't. This approach amounts to coercion and does not comply with the principle of Free Prior and Informed Consent enshrined in the UN Declaration on the Rights of Indigenous People.

Nautilus' consultation efforts to date have focused on reassuring communities in the Coastal Area of Benefit about the safety of their technology. It can be concluded from our field research and Nautilus' presentation materials that Nautilus views consultations and their CSR program as tools to manage opposition to Solwara 1.

However instead of allaying concerns, Nautilus' approach to consultations is fuelling resentment and opposition. Community members expressed their frustration at the "one-sided spin" that fails to address their questions.

One effect of the Nautilus CSR program has been to create divisions within communities over support for Solwara 1, and between those communities receiving benefits and those who fall outside the coastal area of benefit. The latter worry that they will experience impacts from Solwara 1 but are not eligible for any assistance.

Formal Agreements

In PNG, MoA set out arrangements between mining companies, governments and Landowner Associations for community development funds; employment and training; business development assistance; goods and services procurement; fiscal receipts and expenditure reporting; environmental management; rehabilitation and mine closure; royalties and benefit distribution, special support grants and the tax credit scheme.

A MoA is currently under negotiation between the National and Provincial Governments and Nautilus. In addition, the ENB and NIP Governments are negotiating their own Memoranda of Understanding (MoU) with Nautilus focusing on roads and bridges for NIP and communications infrastructure for ENB.

However, Solwara 1 will yield little in terms of the benefits that Governments would normally anticipate from mining projects. It will generate limited revenue and limited opportunities for employment and business. As the sea-rights of local communities are not recognised, they are not party to the MoA or the MoUs and will not receive benefits and royalties as would landowners from a land based mine.

ENVIRONMENTAL CONCERNS

The concerns expressed to the research team about the potential environmental impacts of Solwara 1 include: direct physical destruction of unique ecosystems; noise generated by the mine's intended 24 hour per day operation and particularly the effect of this on whales, dolphins, shark, leatherback turtles and tuna; pollution resulting from accidents and routine mining operations; heavy metal contamination of the food chain via direct exposure and/or bioaccumulation through the consumption of contaminated marine organisms; pollution of the beaches and inshore waters of northern DoY Island and west coast NIP due to the strong currents and winds in the St George Channel from the direction of the Solwara 1 (as confirmed by CSIRO modeling); highly acidic return water pumped back to the seafloor; and increased seismic activity due to mining disturbance.

There appears to be a consensus across all stakeholder categories that PNG lacks the capacity to monitor and manage environmental impacts and to respond to any accidents that may occur. There is also no capacity within PNG to analyse heavy metal concentrations in seafood consumed by local communities.

The lack of independent science was seen to pose problems for the environmental management of Solwara 1 as does the general lack of scientific knowledge of: ecosystems and impacts; the cumulative effects of SBM in combination with other pressures on the ocean due to global warming; of the marine food chains and the ecological relationships between seafloor biota and organisms living higher in the water column.

This research identified three spheres of interest that are particularly vulnerable to potential impacts from Solwara 1: customary use of the marine environment; fisheries; and tourism.

Risks to Customary Use

The connections that coastal communities in the Pacific hold with their marine environment are well documented by anthropologists. Our field research confirms that connections with the sea remain strong for the people of Madang, West coast NI and DoY Islands. Islanders spoke many times of their knowledge of both their inshore environments and the deep sea, including the ocean around the Solwara 1 site. This knowledge was confirmed by scientists at UPNG.

The living relationship that DoY Islanders and NIP coastal communities have with the deep sea starkly contradicts the assertions of the Government and Nautilus that the proposed Solwara 1 mine site is too remote to affect them and that coastal communities do not access the Solwara 1 site. It also questions their claim that there are no communities with rights over the Solwara 1 site.

Section 5 of the Customs Recognition Act of the PNG Constitution may protect the interests of local communities as it confers rights to traditional owners over water, reefs, and seabed.

The denial of the rights of communities in relation to Solwara 1 by Nautilus and the National Government may be in breach of the PNG Constitution.

Customary rights may also be a relevant consideration in relation to the genetic resources of deep sea specimens that Nautilus (or associated scientists) may have taken out of PNG or may take out in the future.

Risks to Fisheries

Fisheries provide the most important sources of income and protein to the maritime communities of ENB and NIP. The NFA and provincial governments invest heavily in support for fishing cooperatives and local fishing groups. Many of these are now self sufficient, having expanded and diversified into other small enterprises and provide many families with incomes.

Despite the significance of fisheries to the Bismarck Sea archipelago, there are no policies or laws protecting the rights of small scale fishers and fishing cooperatives against access to their fishing grounds being restricted by SBM, their fish stocks being reduced by SBM, or their seafood being contaminated by SBM.

Many fishers are concerned that their access to the Bismarck Sea could be restricted by SBM. The fishing grounds of the DoY Islanders and west coast NIP villagers encompass the Solwara 1 mine site - in direct contradiction to the claims of Nautilus and the Government.

The Solwara 1 sites also lies along the migratory route of tuna. At a national level, commercial tuna fishing in the Bismarck Sea makes a significant contribution to PNG's economy. Provincial and National governments are investing in this sector. In NIP a joint venture trialing ultra low temperature snap freezing of long line tuna for the sushimi markets in Japan and Korea is expected to go fully commercial, providing direct local employment with a fleet of 10 ships and large on-shore freezer storage capacity.

Risks to Tourism

The National Government has identified Kokopo as the national tourism hub. Along with the ENBPG and developers it is making significant investments to upgrade infrastructure. In addition, both Kokopo and Kavieng offer marine based eco-tourism experiences that contribute to the economies of local communities with villages and resorts cooperating to generate environmentally friendly forms of income. Such projects have the potential to expand with benefits to both the small and large-scale operators. Fear was expressed that Solwara 1 will destroy these low impact, sustainable forms of income for Kokopo and Kavieng.

INTRODUCTION

1.1 THE RESEARCH PROJECT

This report is based on research conducted for the Bread for the World Pacific Regional Office during February to April 2016. The research was led by Dr. Helen Rosenbaum with field research assistance from Rosa Koain and Christina Tony and logistical support from the Bismarck Ramu Group. During March 2016, the research team conducted interviews with 50 individual stakeholders and held five group interviews in Madang, Kavieng (NIP), Kokopo (ENBP) and Port Moresby. Community visits were conducted in west coast NIP, the Duke of York Islands and Karkar Island (Madang). In addition, video footage of interviews previously filmed by the Bismarck Ramu Group were analysed. The cross section of stakeholders interviewed included national and provincial government representatives; church representatives; members of non-governmental and community based organisations; community leaders; women's leaders; university researchers; members of parliament; a tourism operator; and fishery cooperative managers.

1.2 SNAPSHOT OF THE SOCIO-POLITICAL CONTEXT IN PNG

1.2.1 Overview

With a population of around 7.3 million spread across a mountainous mainland and approximately six hundred islands, Papua New Guinea (PNG) faces many geographic and cultural challenges. PNG has over 800 known languages and thus over 800 cultures. Tok Pisin, Hiri Motu and increasingly English provide the country's bridging languages. PNG is rich in gold, copper, silver, nickel, cobalt, petroleum and natural gas. Thus, mining has provided substantial export earnings - contributing more than 50% of PNG's GDP, as well as royalties and employment. However, PNG's infrastructure remains poorly developed. The country's topography and large distances combine with insufficient maintenance to result in a limited road network, inadequate shipping, and the closure of many airstrips. As a consequence the distribution of services is unequal and PNG is commonly described as a 'two speed economy'. This is currently exacerbated by the current economic downturn and low copper prices which has resulted in many companies stalling exploration and production activities and has reduced the revenue generated for the Government.

Thus, life for most Papua New Guineans is still based in remote villages with poor access to health services, education and paid employment opportunities. Local economies rely on subsistence and small cash-crop agriculture and fisheries. It's estimated that only 15% of the population live in urban areas, with the major cities being the capital Port Moresby, Lae, Madang, Wewak, Goroka, Mt Hagen, and Rabaul/Kokopo.

1.2.2 Government and Governance in PNG

Inherited as a colonial legacy, PNG's system of government sits uncomfortably with its own traditional forms of decision-making, patronage and social networks. Two key cultural norms the *'bigman'* and the *'wantok'* system underpin the ground rules that determine how PNG's government and economy operate in practice - as opposed to the structures that are mapped out in law.

Formally, PNG is a constitutional monarchy. The Head of State is Queen Elizabeth II, who as in Australia, is represented by a Governor-General. There are three levels of government - National, Provincial and Local with the roles and responsibilities of each laid out in the National Organic Law. Provincial Governments are branches of the National Government rather than a federation of self governing states. As described in the findings of this report, this arrangement is a significant source of contention in regard to decisions about natural resource exploitation.

PNG has 20 provinces, the autonomous region of Bougainville and the National Capital District. Each of these 22 divisions form regional electorates and the members elected serve as both national parliamentarians and provincial governors. Another 89 members are elected from "open seats" for each province making a total of 111 members of parliament who sit in a single chamber. The Prime Minister is appointed and dismissed by the Governor-General as requested by Parliament, and the National Executive Council is appointed by the Governor-General on the rec-

ommendation of the Prime Minister. Whilst election terms are 5 years, no-confidence motions topple governments far more frequently.

The justice system comprises the Supreme Court, National Court, and local and village courts. The independence of these has been called into question due to poor governance and the controversial Judicial Conduct Law. This law was passed in 2012 and gives the National Government the power to suspend judges.[2]

In the years following Independence in 1975, much hope was held for PNG forging a modern society based on old traditions. The five national goals of PNG's constitution create an inspiring vision of respect, equality and sustainability. Papua New Guinean's with a genuine love for their country often cite these goals today.

Sadly however, the culture of the *bigman* and the *wantok* system have eroded the ability of governments and the judiciary to deliver on these goals in the best interests of a nation state.[2]

The *bigman* has tribal roots but is now used to describe politicians and businessmen who maintain power by looking after those whose support they require. The pidgin term *wantok* translates to 'one talk'. It literally refers to those sharing the same language. Today it encompasses a much wider network of people that may share language, geography, kinship, or other personal connections. In the absence of a formal social welfare system, the wantok system provides PNG's social safety net.

However, the wantok system can result in debilitating expectations of those in positions of power and privilege, or even those who hold a modest job or run a small trade store. It can result in workers giving up on saving money to improve the lives of family or relocating to avoid demands, and small businesses collapsing under the burden of providing free goods.

The wantok system can make life difficult for those who are honest. However, for those whose sense of entitlement blurs the boundaries between the State's and their own personal resources, being a bigman offers much largesse for themselves and their wantoks. The impacts of this on the provision of basic services, public safety, security, and economic development are well documented in media articles.[3] It was predicted over 10 years ago that if this continues, "Papua New Guinea's democracy will become less liberal, criminal influence will grow, public order will deteriorate, more local groups will go their own way, and Papua New Guineans will become poorer, hungrier, and sicker."[4]

It is salient to note that during the course of this research, the National Government was unable to meet its obligations to pay public servants on time, the main Port Moresby hospitals had (again) run out of bandages and basic medications, and we were advised that the University of PNG may have to close its doors in four months unless it receives its budget allocation from the National Government.

PNG's poor governance has resulted in it being rated as a "fragile state" by the World Bank, Britain, and Australia.[5] In 2015, the Fund for Peace *Fragile States Ranking* placed PNG in the high warning category.[6]

Weak governance and institutions provides an ideal environment for companies evading public scrutiny and rigorous environmental regulation. In conducting this research stakeholders frequently voiced the questions, 'Why here?', 'Why doesn't Nautilus experiment in Canada's oceans?' . The answer, at least in part, is likely to lie in the fragile state of PNG's governance.

FINDINGS

2. RESOURCE GOVERNANCE RELATING TO SOLWARA 1

2.1 THE NATIONAL SPHERE

According to stakeholders there is an absence of evidence based policy discussion in PNG. This is attributed to lack of capacity and to the control exerted by those in power with vested interests. At the level of National Parliament, Members of Parliament (MPs) rarely question cabinet submissions for fear that their own submissions could be challenged. They also fear angering Prime Minister (PM) O'Neill who may suspend their district grants. Officially these grants are allocated to fund projects by the District Development Authorities in their electorates, but MPs commonly misuse them as a "slush fund" for election campaigns.

In the experience of one MP, the majority of parliamentarians oppose sea bed mining (SBM), but due to the influence exercised by the PM they won't voice their concerns. Various opposition members have spoken out against SBM but it's believed that if they were in office they would be supportive of the project and possibly "even more corrupt".

It was also observed that ministers are "well looked after" to provide approvals on projects quickly. For the Solwara 1 project this translated to the permits and the license approvals being provided by the Minister for Mining without consultation with the NIPG and ENBPG administrations or MPs from those provinces about the Environmental Impact Statement (EIS), the risks, or the costs and benefits of the project.

Interviewees advised that processes for checks and balances regarding decision-making powers do exist, but many ministers don't like limitations placed on their roles and over-ride them.

The national government departments charged with regulating resource extraction projects and protecting the environment are believed to be more concerned with expediting projects than safeguarding the interests of Papua New Guineans. It was noted that good staff had fled government departments due to their disillusionment at the political control over their work. The staff currently employed in national government departments were described as either "too incompetent to get a job anywhere else, in career transition, or corrupt."

We were informed that discussion via Facebook by civil society actors critiquing government decision-making in relation to Solwara 1, concludes that lack of Government supervision is the reason that Nautilus established this project in PNG.

2.2 NATIONAL-PROVINCIAL RELATIONSHIPS

The disempowerment of the provinces in regard to the exploitation of natural resources was emphasised by provincial government stakeholders in Madang, ENBP and NIP. They maintain that under the Organic Law provincial administrations lack decision-making authority: decisions to license resource extraction projects are imposed on them by the National Government. The view commonly expressed by senior provincial government officials, is that their only option now that the National Government has granted Solwara 1 its license, is to maximize the opportunities that can be gained for their provinces. (This is discussed further in section 4.)

The Organic Law sets out the roles, responsibilities and relationships between National, Provincial, and Local Level Governments. At the time of interview, NIP Governor, Sir Julius Chan stressed that he had never supported Solwara 1. He accused the National Government of breaching the Organic Law's requirements for meaningful consultation with the provinces over resource extraction projects. However, he stated that *"Legal action against the Government of PNG isn't an option financially for the NIPG and who would I take to court anyway?"*[7]

2.3 THE POLICY AND LEGISLATIVE SETTING

2.3.1 High Level Policy

The objective of the fourth goal of the Constitution of the Independent State of Papua New Guinea is for "natural resources and environment to be conserved and used for the collective benefit of us all, and be replenished for the benefit of future generations".

Consistent with this, the PNG national strategic plan 2010-2050 - "Papua New Guinea Vision 2050" - sets a

course for PNG to develop and build a solid and sustainable economic foundation based on the renewable sectors of agriculture, forestry, eco-tourism and fisheries. In fact the National Government has identified ENB as the tourism hub of PNG (see section 6.5 for further discussion).

Supporting documents include the Development Strategic Plan (DSP, 2010-2030) and the Medium-Term Strategic Plan (MTDS, 2016-2020). The Government intends to align all sector policies, plans and strategies to the DSP. A 2013 review of fisheries policies and strategies in Melanesia anticipates that this will have major implications for inshore and offshore fisheries and may necessitate them being assessed for sustainability.[8]

It is unclear how the DSP will affect the resource extraction sectors and SBM in particular. However a review of the Mining Act and the Mineral Resources Authority (MRA) Act is underway and several new policies have been developed and submitted to the National Government. In addition to an Offshore Mining Policy, these include a Geothermal Policy; Mine Closure Policy; Involuntary Resettlement Policy; Sustainable Mining Policy; and Mining Policy.[9.]

According to former Mining Minister Byron Chan the legislative review is "aimed at ensuring sustainability". Minister Chan has also been quoted as stating, "We must ensure the footprint left behind by mine development brings about tangible benefits that are sustainable after mine closure."[10]

The extent to which environmental sustainability will be addressed by the mineral sector, and the new offshore mining policy and legislation in particular, remains to be seen. PNG's new high level policy regime has been described as "extremely oriented towards economic development with comparatively very little emphasis on sustainable management."[11]

2.3.2 Legislation and Regulation

"*We want a law that protects us. We feel insecure about the possible impacts of the project. We are at the mercy of the information they provide and have not been empowered to question policy or law.*"

(NIP local community leader, February 2016)

The Solwara 1 Project was issued with its final Environmental Permit in 2009 and its 20 year mining lease in January 2011. These were granted in the absence of a legislative and regulatory framework for SBM.

As described above, it is anticipated that the new offshore mining policy by the Department of Minerals and Geohazards will fill this gap. Pending Government endorsement, it will be presented as a bill to parliament. However it wasn't possible to confirm the timeframe for its passage.

The MRA officer interviewed emphasised that the current Mining Act (1992) is applicable to both off shore and land-based mining. He insisted therefore that the fact that Solwara 1 was licensed under this act presents no problem. However this assertion remains to be tested.

Policies and legislation to manage the marine environment and its various uses are scattered across portfolios with little collaboration between departments and limited capacity to implement them (eg: National Fisheries Authority, National Maritime Safety Authority, PNG Ports Corporation, CEPA). Perhaps the most comprehensive set of instruments occur in the fisheries sector where we are advised there are public acts, regulations, management plans, policies and gazettal notices that support the intention of the United Nations Convention on the Law of the Sea (UNCLOS - ratified by PNG in 1997). Various sections of the Fisheries Management Act and specific Management Plans also address aspects of customary use in the context of fisheries management.

However, there is a significant gap with respect to policies or laws that offer recourse to formal processes, or protection from the impacts of SBM. In particular there appear to be gaps with regard to:

the protection of the biodiversity of PNG's seas in line with the provisions on the protection and preservation of the marine environment contained in the UNCLOS.

- recognising and preserving access rights and livelihoods of artisanal fishers in accordance with traditional and current uses of the seas (discussed further in section 6)

- protecting the rights of commercial fisheries
- regulating access by foreign companies to PNG's genetic resources, establish the rights of local communities to provide their prior informed consent to the taking of these resources and fair benefit sharing arrangements[12] (discussed further in section 6)
- trans-boundary pollution
- the contamination of migratory species such as tuna, leatherback, turtles, and whales.

Further research would be required to explore these legal aspects. In particular it would be useful to clarify the situation regarding legislation regulating access to genetic resources and benefit sharing, and whether regional treaties such as the Nauru Agreement and/or regional bodies such as the Western Central Pacific Fisheries Commission offer any protection against trans-boundary pollution and contamination of migratory species.

Marine tenure and resource rights in PNG are unclear with the 1998 Fisheries Management Act, the Organic Law and the Maritime Zones Act 2015 defining different aspects of national, provincial and local community territory and use.

Researchers from the University of PNG (UPNG) School of Science foresee the possibility of legal disputes over SBM and court injunctions relating to customary marine tenure and customary uses of the sea. These issues are discussed further in section 6.

In this context it is important to note that Section 5 of the Customs Recognition Act of the PNG constitution confers rights over water, reefs, **and seabed** to traditional owners.

This section states that:

custom may be taken into account in relation to . . . the ownership by custom of rights in, over or in connection with the sea or a reef; or in or on the bed of the sea or of a river or lake, including rights of fishing; or the ownership by custom of water, or of rights in, over or to water.

(see National Assembly of Papua New Guinea, 1975)[13]

The PNG State Solicitor has advised the National Government that there are no landowners with rights to the Solwara 1 site. **This advice which underpins the approach of the National Government and Nautilus appears to be in breach of the Customs Recognition Act.**

The UPNG School of Science has drafted and submitted a National Ocean Policy to the National Government. We were informed that it recommends a legislative framework to coordinate all uses of the ocean for its protection in line with international and national commitments. If accepted, the Ocean Policy may clarify these areas of uncertainty and fill some of the gaps identified above.

Prime Minister O'Neill announced in 2015 that an Office of Ocean would be established in the Department of Justice and Attorney General to implement the Maritime Zones Act and work on the Maritime Boundaries Delimitation Project. The definition of maritime boundaries is viewed as being of great significance to Papua New Guinea's national security, SBM and fisheries industry.[14] The UPNG are hoping that they may be able to broaden the agenda of the Office of Ocean to the sustainable management and protection of PNG's seas.

3. THE RESOURCE ECONOMICS OF SOLWARA 1

3.1 STATE EQUITY PARTICIPATION IN SOLWARA 1

The National Government has an option in all exploration licenses to take up to 30% equity in any PNG mining development. It exercised this right in relation to Solwara 1 in December 2014 by acquiring a 15% share with an option for a further 15% within 12 months of the PNG Equity Agreement becoming unconditional. In December 2015, the PNG Government decided to not acquire the additional share, leaving its equity at 15%.

The equity was acquired through Petromin, the State Nominee for the Solwara Deep Sea Mining Project, through its wholly owned subsidiary, Eda Kopa (Solwara) Ltd. One stakeholder suggested that the complex arrangement established for the National Government's holding in Solwara 1 could be designed to "park the debt at arm's length" from the Government so as to avoid technically breaching sovereign debt laws. It does not appear that these two entities serve any other function in relation to the management of Solwara 1.

Petromin explains that:

"Given the unique nature of the Solwara 1 Deep Sea Mining Project, the State supported Eda Kopa with a State Guarantee, against which Eda Kopa entered into a financing facility with Bank of South Pacific Ltd for K375 million. These funds are fully committed towards the Solwara 1 Project."[15]

Petromin does not make clear what it is about the nature of Solwara 1 that justifies such a high risk investment on the part of the National Government.

Because of its role in financing the state equity purchase, the research team attempted to meet with the Bank of the South Pacific (BSP). We emailed questions (see box below) as a basis for discussion with the CEO. However we were told that due to customer confidentiality the BSP was not at liberty to discuss these matters. We were advised that all transactions are assessed under the Bank's comprehensive Social and Environmental Management System - "Solwara 1 was assessed under these guidelines with all standards satisfied." For further information we were referred by the BSP to Nautilus "who have conducted extensive assessments in the areas identified."

One stakeholder commented that many people argue that its inappropriate for PNG to invest in a project as risky as Solwara 1, especially when the PNG economy is facing difficulties due to the downturn in the mining sector. Furthermore, we were advised that a recent tax review recommended against the National Government taking up equity in resource projects. It instead encourages the Government to view the resource itself and the tax paid on it as a form of equity.

The Government appears reluctant to accept this recommendation. Due to the high cost of doing business in PNG, the Government uses tax concessions to compete on the international market to attract mine developers. However, it was suggested that addressing administrative inefficiencies and corruption would reduce the cost of business, enabling the Government to enter into revenue generating tax arrangements rather than acquiring equity.

Details of equity arrangement can be found provided in the Nautilus Annual Information form for 2015 (p15 -16).[16]

3.2 Intellectual Property

At the time of writing, Nautilus has applied for 16 suites of patents covering systems, apparatus and methods of the intended SMS operations.[17] Intellectual property rights over equipment and methodology appear to have been a significant motivation to the National and Provincial governments to participate in the Solwara 1. According to the Governor of NIP, the MoU between his province and Nautilus includes provisions on intellectual property rights. The State Equity agreement allocates the National Government a 15% share of the intellectual property developed to mine at Solwara 1. (See also section 4.2.1)

3.3 FINANCIAL ASPECTS OF SOLWARA 1

3.3.1 Corporate Relationships

Nautilus Minerals is a publicly traded company with a majority of shares privately held. Interviewees referred to a Russian investor associated with Amur

Questions Sent to the Bank of the South Pacific

- How does the bank view the risks associated with Solwara 1 mine?
- How does the bank see the relationship between possible environmental impacts and financial liability?
- What processes did the BSP undertake to determine the financial risk to the PNG government and the Bank? What factors were considered?
- In visiting communities close to the Solwara 1 site we witnessed the high level of fear and concern regarding the possible impact of the mine on fisheries – the chief livelihood and form of protein for these communities. Does the BSP have a view on this?
- How does the BSP view the capacity within PNG to manage an accident related to the operation of the Solwara 1?
- How does the BSP view the capacity within PNG to monitor the environmental impacts of the mine?
- Does the bank have a view on the off-shore processing of the ore and any economic implications of this?

Minerals (http://amurminerals.com) as Nautilus' primary investor. One stakeholder who met this investor stated that he was very excited about DSM representing a huge leap forward in mining with high returns for investment due to its portability and minimal infrastructure and staffing. Another stakeholder commented that the welfare of Papua New Guineans would probably not be high on the agenda of a Russian mining investor. A recent Blog posting by Jon Copely presents further information about the Russian connection.[18]

Corporate shareholders in Nautilus are: MB Holding Company LLC at 28.14%; Metalloinvest Holding (Cyprus) Limited at 20.89%; and Anglo American plc at 5.99%.

Mawarid Mining LLC is a wholly-owned subsidiary of MB Holding Company. Mawarid Mining was established to explore and develop mining opportunities in Oman and internationally. Its CEO, Tariq Al Barwani is on the board of Nautilus as is Dr. Mohammed Al Barwani, the founder, owner and Chairman of the MB Group. Other members of the board of directors are: Geoffrey Loudon (chairman), Russell Debney, Cynthia Thomas, and Mark Horn.[19]

At the time of writing, the executive staff of Nautilus are CEO Michael Johnston and CFO Shontel Norgate. The company has three Vice Presidents: the VP of Operations (Kevin Cain), VP of Papua New Guinea Operations (Adam Wright), and VP of Strategic Development and Exploration (Jonathon Lowe). The Company employs two country managers being Mel Togolo in PNG and Paul Taumoepeau in Tonga.

3.3.2 Equipment and Infrastructure

It can be surmised that Mawarid Mining is closely involved in the development of Nautilus' equipment which will soon be tested in Oman. The Mawarid web site identifies the Nautilus head office in Canada as one of its bases for international operations and describes the Solwara 1 project as its PNG operation. The web site states that:

"Nautilus plans to launch additional projects on our extensive tenement holdings across the western Pacific. To prepare for this growth we continue to evaluate technology from the perspective of its application to future production systems. Among the key technology areas that we will continue to evaluate and develop are:

- *Mobile mineralised material transhipment systems to increase flexibility and reduce material handling and transportation costs.*
- *Floating concentrator facilities for use at a sheltered near-shore location or ultimately, for offshore/on site application.*
- *Improved scale/efficiencies in cutting, gathering and pumping equipment.*
- *Equipment adaptations for rougher sea conditions."*[20]

This conveys a vision of a streamlined efficient floating production system that can be readily shifted from site to site with no investment required for land based infrastructure. This is consistent with the new leaner operational strategy for Solwara 1, whereby Nautilus has eliminated the need for port facilities. Instead, Nautilus is building a larger production support vessel capable of storing approximately 45,000 tonnes of ore and accommodating 180 workers. We were advised that Nautilus plans to transfer the ore from the support vessel directly to a bulk carrier that will export it to China. In December 2015, the Tongling Sales Agreement was signed for the sale of ore extracted from Solwara 1.[21]

Thus, Nautilus intends the Production Support Vessel to provide the operational base, the power supply, the dewatering plant and ore storage facility. As described by one stakeholder, "All the action will be on the ships with very few staff on the ground". We were told that Nautilus plans to open a small office in Namatanai (NIP), which is closer to the site and to maintain a Port Moresby office with minimal staff.

Whilst Nautilus has no current plans to invest in port facilities, it is interesting to note that Rabaul Port in ENB is being replaced by a much larger port facility in Kokopo Bay - most likely in support of Solwara 1 and future SBM in the Bismark Sea. It was reported that many businesses in Kokopo are excited about the opportunities that will flow from Solwara 1, for example 130 security guards will be required as will be boats to transport workers to the ships, and accommodation in Kokopo for workers. Local businesses anticipate local employment for low skilled jobs with high skilled positions to be filled by fly in fly out workers.

At the time of writing the Production Support Vessel is under construction in the Fujian Mawei Shipyard in south eastern China. Other key pieces of equipment are the Riser and Lifting System and Seafloor Production Tools namely the Auxiliary Cutter, Bulk Cutter and Collecting Machine. The status of the equipment is described on the Nautilus web site (http://www.nautilusminerals.com/irm/content/status-of-the-equipment.aspx?RID=424). In January 2016, Nautilus took delivery of seafloor production tools which have been sent to Oman for shallow water wet testing.

In order to complete, test and deploy the entire Seafloor Production System, Nautilus will need to obtain an additional US$125 million to US$175 million. According to its Annual Information Forms (https://www.sedar.com/search/search_en.htm), the company's funds are insufficient to complete the construction of the Seafloor Production System or to bring the Solwara 1 Project into production, and there can be no assurance that additional sources of finance will be available to the Company. The 2015 form further states (on p51) that:

> ***"Failure to obtain additional financing on a timely basis could cause the Company to reduce or terminate its proposed operations."***

According to the understanding of NIPG stakeholders, the SBM schedule for the Bismark Sea is Solwara 1, Solwara 12 (25 km to the north west of Solwara 1) and Solwara 2 close to Djaul Island near Kavieng. The Solwara 12 Report is available on the System for Electronic Document Analysis and Retrieval filing system for the Canadian Securities Administrators under Nautilus' profile at www.sedar.com and is incorporated by reference in the 2015 Annual Information Form.

3.3.3 Financial Risks

Nautilus' Annual Information Form for the Fiscal Year ending 2015 was lodged with the Canadian Securities Administrators in March 2016. The section on Risk Factors represents a far more honest appraisal of the risks of the proposed Solwara 1 than does the Environmental Impact Statement or any other of form of public information provided by Nautilus about Solwara 1. Several of the risks identified concur with those highlighted by the independent reviews of the EIS conducted by Professor Richard Steiner and the DSM Campaign. For example (author's underlining for emphasis):

> *"... Technologies have not been fully proven in such sub-sea conditions and for this specific material and application. Disturbing the seafloor may cause issues with visibility that could interfere with operations ... Tenements are located in an active tectonic and volcanic setting and volcanic activity, including*

earthquakes, could hinder operations or damage or destroy equipment and there is a risk that volcanic activity could result in volcanic material, such as lava, covering any SMS deposit found, rendering it uneconomic." (Risks to mining and recovery, p52)

"... Weather, volcanic eruptions, storms, cyclones, tsunamis and sea conditions may also damage or destroy equipment, or contribute to injury or loss of life. (Weather and Sea conditions p 60)

Thus, whilst acknowledging the potential for sediment plumes and for seismic and storm activity to damage equipment, the document fails to address the environmental impacts these would cause.

Nautilus does concede however:

"... while Company studies have indicated a low likelihood of risk to the aquatic environment from mining activities, the actual impact of any SMS [seafloor massive sulphide] mining operations on the environment has yet to be determined. (Environmental Risks and Hazards, p61)

In fact, the company describes its strategy as to:

"Demonstrate that seafloor resource development is commercially viable and environmentally sustainable" (p24)

by using Solwara 1 as a testing ground:

"Nautilus has not completed and does not intend to complete a preliminary economic assessment, pre-feasibility study or feasibility study before completing the construction and first deployment of the Seafloor Production System at the Solwara 1 Project. Management considers the Company's best interests would be served by first testing the operational viability of the Seafloor Production System at the Solwara 1 Project in order to demonstrate whether existing offshore technologies can be adapted to cut and recover high grade seafloor massive sulphides from the deep ocean. "

(No Pre-feasibility study or feasibility study, p52)

The above section and others issue warnings to investors such as:

"No independent Qualified Person has confirmed the amount of these costs or recommended that these costs be incurred. There is significant risk with this approach and no assurance can be given that the Seafloor Production System, if fully funded and completed for deployment at the Solwara 1 Project, will successfully demonstrate that seafloor resource development is commercially viable.

"The higher-grade chimney mounds have only essentially been surface sampled by breaking off protruding chimney pieces. ... until these mounds are tested by drilling their grade, density and depth should be considered of low confidence ..." (p46)

"... Performance, availability, reliability, maintenance, wear and life of equipment are unknown. There can be no guarantee that sub-sea engineering and recovery systems can be developed or if developed, will be employable in a commercially-viable manner." (Operational Costs, p54)

The business case for Solwara 1 would therefore appear to be very weak and the risks for the Government of PNG, very high. According to the MRA interviewee, the business plan for the mine was developed jointly by Nautilus and the Department of Commerce and Industry. However, the scrutiny applied by the Government is questionable. Another stakeholder pointed out that ideally the Department of Treasury should have played a role in assessing the business case. They also observed that this never occurs for resource projects due to the lack of coordination between departments.

A senior provincial stakeholder noted that "Nautilus is making money on the stock exchange even if it never produces a single ounce of gold." This same official expressed concern that lack of onshore processing in PNG opens the door for transfer pricing, reducing the profits Nautilus will declare and thus the royalties and taxes to be paid. In addition, he noted jobs will be exported to China, but that on the positive side pollution will also be exported.

4. NATIONAL GOVERNMENT AGENCIES AND SOLWARA 1

The National Government agencies directly relevant to Solwara 1 are the:

- Conservation and Environment Protection Authority (CEPA), which was responsible in its earlier incarnation, as the Department of Environment and Conservation (DEC), for managing the processes required for the approval of the EIS. The CEPA will be responsible for overseeing environmental regulation and monitoring of Solwara 1.
- Mineral Resource Authority (MRA), which facilitates the negotiation of royalty, taxation and benefit arrangements between Nautilus, the provincial governments and the National Government. The MRA is also responsible for facilitating Nautilus' community consultation meetings, monitoring the delivery of outputs as per the terms of the agreements, and enforcing the implementation of legislation and regulations.
- Department of Minerals and Geohazards, which has drafted the new offshore mining policy and legislation but doesn't appear to have an ongoing role in relation to Solwara 1.
- National Fisheries Authority (NFA), which was identified by many stakeholders as an agency that should be vocal in relation to the risks of Solwara 1 but instead has been "missing in action".
- Several stakeholders observed that the objective of the regulatory agencies (CEPA and MRA) is to facilitate as many resource extraction projects as possible with the least possible delay.

4.1 THE CONSERVATION AND ENVIRONMENT PROTECTION AUTHORITY (CEPA)

4.1.1 Challenges Posed by Capacity and Corruption

The CEPA evolved as a statutory authority in 2015 out of the former DEC in an effort to create more funding to strengthen capacity for environmental approvals, monitoring and compliance activities. The CEPA's enabling legislation allows for cost recovery for regulatory activities, including the costs associated with reviewing Environmental Impact Statements (EIS) and social studies and the costs of monitoring. It also provides opportunities for partnerships between the CEPA and the private sector to increase the funding pool available.

The Minister for Environment ans Conservation, John Pundari[22] has publicly state that DEC was unable to deliver effectively on its responsibilities for management of water resources and biodiversity and the environmental regulation of resource projects.[23] He explained that this was due to insufficient funding and limited human capacity, "substantially as a result of an inability to compete with the rapidly growing resource sector for suitably qualified staff". According to the Minister, DEC was expected to operate on an annual budget of between K10 to K12 million - half the budget of the Mineral Resources Authority, and one third the budget of the PNG Forestry Authority. Minister Pundari estimates the budget required is between K40 million and K50 million.

We were advised that CEPA can close down non-compliant operations, incurring significant expense to the developer. However, in practice this rarely occurs and companies operating in PNG are **"self regulating"** because CEPA doesn't have the funds to monitor their activities. Nor does it have access to the best scientists and experts. It's possible for companies to "lock-up" the best people by employing them to conduct the social and environmental studies required to gain permits. They are then not available to CEPA as independent experts.

One senior company executive observed that in his negotiations with CEPA that *"the regulators don't do their job - they don't fight hard to protect Papua New Guineans and many companies would turn this to their advantage."* He noted that senior government offi-

cials and ministers commonly request favours from companies in return for the smooth passage of approvals.

The conflict of interest that the PNG Government has as both joint venture partner and regulator was highlighted by several stakeholders. We were told that there is a history of DEC secretaries signing off on EISs and Environmental Management Plans without allowing their staff time to assess them. Many good staff have resigned as a result.

4.1.2 The Environmental Management of Solwara 1

During the course of this research, discussion with senior CEPA staff responsible for the processing of the Solwara 1 EIS confirmed the observations above. That is that the CEPA has not yet developed a capacity for high level critical analysis, nor a culture of prioritising the protection of the environment.

According to these CEPA interviewees, CEPA is confident that there will be no major impact from plumes generated by the Solwara 1 mine. They maintain that there is already an active volcano next to the Solwara 1 site and it produces a heavy plume that remains near the sea floor and has no impact on tuna or other fisheries. "Solwara 1's plumes will be peanuts in comparison". These senior staff also emphasised that no problems will occur with metal pollution or trans-boundary impacts but were unable to present supporting evidence, other than they consider the Solwara 1 mining process to be a "closed system." This is despite stating that the biggest concern would be the return of water to the sea bed after dewatering the slurry. They also assert that export of the ore directly to China reduces the risk of spillage compared with a scenario of stockpiling the ore at a local loading facility.

The *Environment Act 2000* provided the legal framework for the environmental approval process for Solwara 1.[24] Key elements of the approvals process were:

- The process commenced when Nautilus registered their intent in October 2006
- In February 2007 Nautilus submitted the Environmental Inception Report which was approved by DEC in May 2007, enabling the EIS to commence
- In October 2008 Nautilus submitted their EIS to DEC
- In April 2009, the Mining Warden's hearing for the Solwara 1 mining lease (MLA154) was held
- In December 2009, DEC issued the final Environmental Permit for development of the Solwara 1 Project for a term of 25 years
- January 2011 Nautilus was granted a 20 year mining lease for the Solwara 1 project.

As described by the CEPA staff, the environmental permit process took more than twice as long for Solwara 1 than for land-based mines - more than one year rather than the usual six months. The DEC contracted the consultancy firm Cardno-Acil[25] to conduct an independent review of the EIS. A number of issues were identified (in relation to air pollution, transfer of the ore to container ship, and noise levels) and addressed before the license was granted.

The CEPA refuses to make the report of the independent review by Cardno publicly available. Our request for it during this meeting met with a perplexed response that the folders containing the hard copies and CDs are stored in the old DEC building. Due to the move to the new CEPA building it wouldn't be possible to locate those reports. In addition they would have to gain the approval of the Managing Director of CEPA, and the advice of the CEPA legal team. The staff stated that they weren't sure if the independent report and its recommendations were public documents.

This almost entertaining parody was reminiscent of the responses gained to earlier requests for documents relating to the Solwara 1 permit process, to the Managing Director of CEPA and the Environment Minister by the Deep Sea Mining Campaign and PNG colleagues.[26] We have previously been referred back to Nautilus to obtain these documents only to be informed by Nautilus that these reports are the property of the PNG Government. This situation highlights the lack of transparency surrounding the approvals and licensing process.

The details of the environmental monitoring regime and the disaster risk management plan will apparently be contained in the Environmental Manage-

ment and Monitoring Plan (EMMP) to be prepared by Nautilus. The PNG Government appears to have no intention of developing its own independent environmental monitoring regime or of collecting independent baseline data. However, the CEPA interviewees advised that an extra safeguard has been built in at the request of the provincial governments. There will be six- monthly inspections by independent consultants on board the support vessel while mining is occurring. They were unclear about the objectives of these inspections and what will be monitored. Provincial level stakeholders interviewed were similarly uncertain. It was suggested that responsibility for disaster response would be delegated to the National Maritime Safety Authority.

It is unclear when the EMMP will be finalised and what opportunities, if any, there will be for civil society and independent scientific scrutiny.

4.2 THE MINERAL RESOURCE AUTHORITY (MRA)

The Mineral Resources Authority (MRA) was established by the Mineral Resources Authority Act 2005 to replace the regulatory roles previously undertaken by the Department of Mining and to expand functions into five divisions - Development Coordination, Regulatory Operations, Geological Survey, Special Projects and Corporate Services (described in detail on the web site: www.mra.gov.pg).

The MRA is the lead government organisation addressing the full range of matters concerning the exploration and exploitation of minerals in PNG. It advises the Minister on matters relating to mining, and the management, exploitation and development of PNG's mineral resources; oversees the implementation of the Mining Act 1992, Mining (Safety) Act 1977 and all other legislation relating to mining; negotiates mining development contracts as agent for the State; acts as agent for the State in relation to any international agreement relating to mining; and administers on behalf of the State any public investment programme relating to mining.[27]

Under the MRA Act, direct funding from the government has been replaced by 0.25% production and alluvial gold export levies, tenement rents and tenement administration fees. This would imply a vested interest in facilitating as many projects as possible and an incentive to facilitate large projects.

The funding strategy would appear to be successful as the MRA appears to be a well resourced, professional agency, engaged in initiatives such as the Extractive Industries Transparency Initiative (EITI) and studies aimed at improving the environmental and social standards of mines operating in PNG.[28] It has carried EITI principles though to the drafting of the new Mining Act, with provisions to increase the financial transparency of Memorandum of Agreements (MoAs) and improve the accountability of all parties to the MoAs from landowner associations through to the provincial and national governments.[29]

4.2.1 Relationship to Solwara 1

The MRA facilitated the first presentation made by Nautilus about Solwara 1 in 2007 to a "State Team" representing all relevant departments. According to one informant who attended that meeting, Nautilus' PNG Manager, Mel Togolo together with Professor Cindy Lee Van Dover from Duke University, addressed State Team about the opportunities and benefits that would accrue to PNG from the project and the safety of the operation.

Questions were raised about environmental risks by one participant but the meeting was described as "being dominated by enthusiasts for sea bed mining" and having an "air of *boys own* excitement" about the technology. There was great eagerness for PNG together with Nautilus to be the first in the world to develop and apply the technology. Reportedly, Nautilus stressed the need to move quickly with the project due to competition from other companies, namely Neptune and the Bismarck Mining Group. Nautilus pressured the Government to issue them with a mining lease so they could use this in support of their fund raising efforts.

Some State Team members recommended requesting further information, including a financial projection for the project. They expressed the view that unless the project generated tax revenues, it should not be approved. Some also raised concerns about the lack of appropriate legislation. However, this more cautious rational approach was over-ridden.

It is relevant to note that to attract investors, Nautilus still invokes what it calls the *First Mover Advantage* in researching and identifying potential high grade resource targets, establishing relationships with key corporate and political partners, obtaining key permits and licences, and developing technologies, knowhow and experience in this emerging new industry.[30]

This research suggests that the enthusiasm for and the simplistic promotion of Solwara 1 continues, despite a frank assessment of the low returns anticipated. This would suggest that the MRA (and CEPA) are politically constrained in relation to Solwara 1.

The Development Coordination Division (the DCD) of the MRA has major responsibility for facilitating the progress of Solwara 1. The scope of the DCD's role includes:[31]

> *"The Development Coordination Division works with landowners and industry partners in activities to benefit landowners whose life, livelihood and environment are impacted by mining and exploration work. DCD aims to promote sustainable management of mining benefits and spin-offs, expand and improve the development of sustainable projects in rural communities.*
>
> *These goals and objectives are addressed through the four branches; Exploration Coordination,*
>
> *Project Coordination, Sustainability Planning and Small Scale mining.*
>
> ***Exploration Coordination** – ensure exploration and mining activities are in compliance with relevant policies and legislations.*
>
> ***Project Coordination** – facilitate the development forum consultation process for the mining projects. This is where the division organizes forums at which landowners, operating companies and the government meet, to discuss issues of concern and reach agreements in the form of*
>
> *Memoranda of Agreements. In doing so, the government through MRA and particularly through the DCD, ensures that all important issues are addressed and all parties are satisfied, or consensus is reached on benefits distribution and community development plans.*
>
> ***Sustainability Planning** – Provides advice and guidance for sustainable planning initiatives for impacted mining communities including gender development. The branch gives advice to landowner groups on how best to use or invest their royalty payments for the long term benefit ..."*

4.2.2 Community Consultations and Environmental Impact

As described in the extract above, one of the roles of the DCD is to facilitate consultation meetings for Nautilus. A requirement to conduct biennial consultations is a lease condition and these have been conducted since 2008. The consultations are co-funded by Nautilus and the National Government. The provincial governments contribute staff members to accompany them so that community members can have a broad range of expertise available.

The MRA staff member interviewed had visited ENB (Duke of York and Watum Island) with Nautilus one week earlier. He recounted that people raised many environmental concerns and this was clearly their main worry. However he and the Nautilus team reassured them that the marine environment and their fisheries won't be affected. He believes that, "Slowly after so much contact with them, the communities are starting to understand how Nautilus will operate, the technology and the safety. Gradually the people are feeling more comfortable." The MRA provided them with a lot of information pamphlets.

According to the interviewee, the likelihood of an accident is very low due to the design of the mining equipment and the riser pipe. He believes that even if the pipe did break, its only dirt (not oil) and that will sink to the bottom. He also parroted one of Nautilus' frequent communication points "that there is no light and no life on the sea floor". When challenged by pointing out that that's not what Nautilus's own research shows, he *back-pedaled* to qualify

that there's no life like in the top layers of the ocean. The MRA views the shipping of ore directly to China in an enclosed barge as an advantage in terms of waste reduction for PNG.

He was unsure whether fishers will be excluded from the Solwara 1 area but firmly stated that this is a question that should be put to Nautilus. This response would imply that the Government will leave the decision about exclusion zones to Nautilus.

4.2.3 Revenue and Agreements

From the perspective of the DCD, Solwara 1 is a small project that will generate limited revenue and limited opportunities for employment and business. There will only be a workforce of 180 on the 250m^2 support vessel. The advice from the public solicitor's office is that no landowners are recognised over the sea and so local communities are not treated as beneficiaries or impacted communities. This presents the Division with difficulties as its job is to allocate benefits and to ensure projects are delivered as per the MoAs. Because of this situation and the low revenue anticipated, the National Government has decided to offer a package of infrastructure and rural development projects (including cocoa plantation rehabilitation), rather than the usual approach of allocating money and benefits to landowner groups.

MoAs include obligations for the developer in relation to establishing a Community Development Fund; Employment & Training; Business Development Assistance; Goods & Services Procurement; Fiscal Receipts & Expenditure Reporting; Environmental & Sustainability Management; Rehabilitation & Mine Closure. While for the Government, MoAs require commitments regarding Royalties & Benefit Distribution, Special Support Grants and the Tax Credit Scheme (by which the developer can provide projects in lieu of paying tax).[32] The MoA is reviewed annually against outputs.

One stakeholder explained that royalty arrangements provide for provincial governments and landowners, whereas taxes generate revenue for the National Government. Thus there can be a level of competition between the National and Provincial Governments in regard to agreements reached with companies about the composition of payments, ie: royalties vs taxes.

As Solwara 1 is only a 3-year project, another consideration for the DCD is the ability of the Provincial Governments to sustain projects beyond the life of the mine.

The MRA interviewee maintained that prior to issuing the Solwara 1 license, extensive socio-economic studies were conducted. However he stated that, "The studies are not publicly available as the government owns them." (These studies are discussed further in Section 5.1.4)

The ENB and NIP Governments are negotiating their own Memoranda of Understanding (MoU) with Nautilus for delivery of projects in addition to the MoA described above (discussed further in section 5).

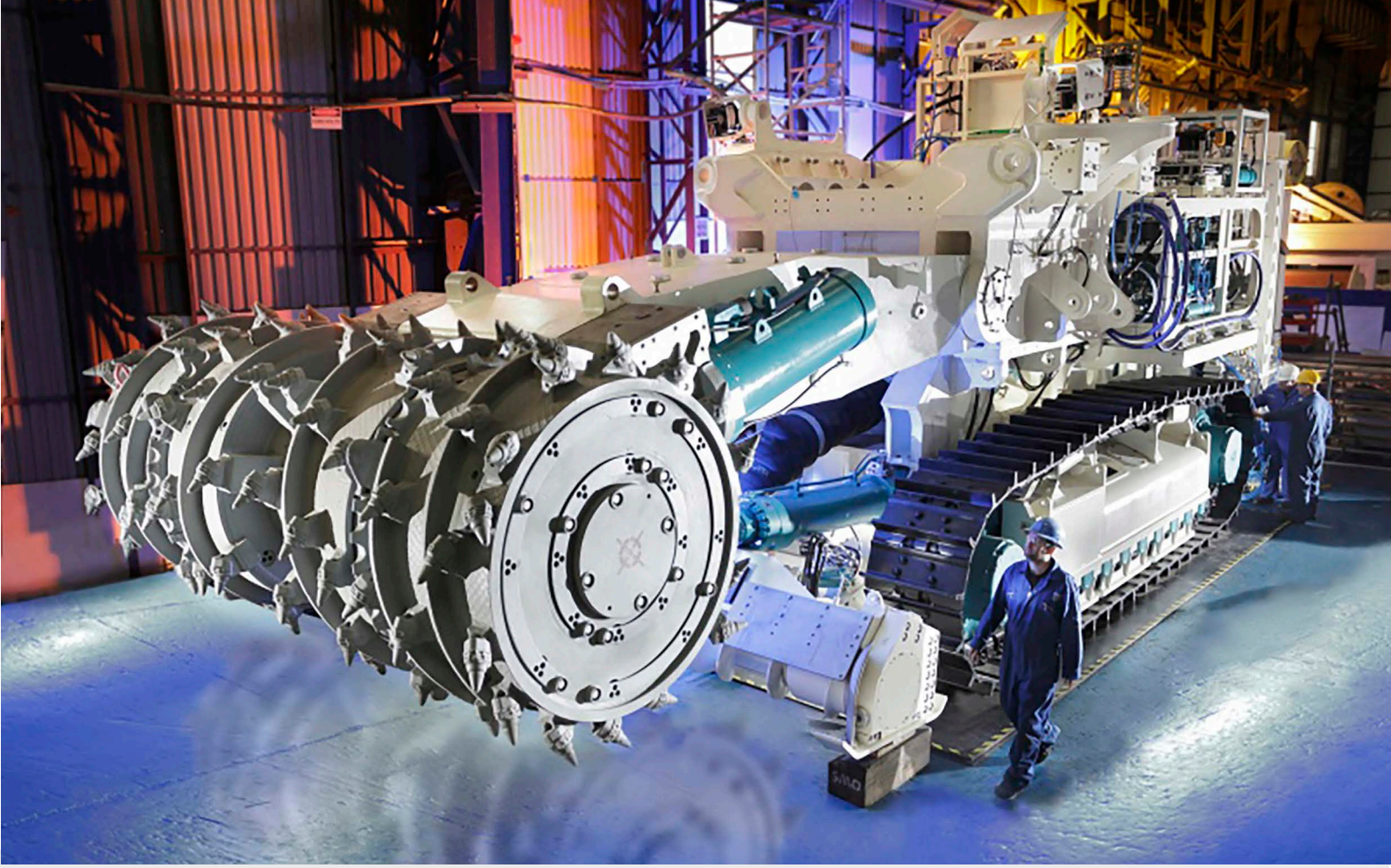
4.3 THE NATIONAL FISHERIES AUTHORITY (NFA)

4.3.1 Overview of the Fisheries Sector

With a coastline more than 10,000 km long and a declared fishing zone of about 2.3 million km^2, Papua New Guinea has the third largest marine jurisdictional area in the Pacific region. The NFA's web site boasts that PNG's waters are one of the most productive in the region and that fisheries potential of PNG is yet to be fully realized.[33] It is believed that there is significant potential to increase the economic returns of PNG fisheries through better management and development programs.

The NFA estimates the annual market value of PNG's commercial catch at K350 to K400 million, with tuna accounting for most of this. The PNG catch of major tuna species (skipjack and yellowfin and smaller quantities of bigeye and albacore) represents 11% of the global catch and around 20% of the total catch from the Western and Central Pacific Ocean (WPCO). In recognition that a regional approach to managing tuna is important, PNG is a party to a number of bilateral and multilateral arrangements for this purpose.

PNG currently has access agreements with Taiwan, Korea, Philippines , China and the US that establish the number of vessels allowed and the access fees payable. Usually about 130 foreign purse-seine vessels fish in PNG waters each year. Increasingly PNG is



Nautilus Minerals Bulk Cutter sea floor production equipment. Source: http://www.nautilusminerals.com/irm/content/seafloor-production-equipment.aspx?RID=411

linking access to the fishery to commitment to onshore investment in the form of tuna processing. It is estimated that around 15,000 Papua New Guineans are now employed in this way.

The NFA recognises that artisanal fisheries are also of major importance to local market and subsistence economies in PNG, but notes that reliable information on their monetary value is difficult to obtain.

4.3.2 Overview of the NFA

The PNG NFA is a non-commercial statutory authority established under the 1998 Fisheries Management Act (amended in 2012), and is self-funded through access and license fees. The Fisheries Management Act 1998 empowers the NFA to manage, control and regulate all of PNG's fishery resources, whether these be inland, coastal or offshore. The Act recognises and allows for customary uses, rights and traditional resource ownership, but it does not in itself empower provincial or local level governments to manage fisheries in what they may consider to be their areas of jurisdiction.[34]

The revenue received by NFA on behalf of the State (amounting to over US $54 million in 2012)[35] is directed after costs are recovered, to provincial level development activities via the Fisheries Project Grants scheme. This allocates annual grants of around K2 million to each of the 14 coastal provinces and K 0.5 million to the 7 highlands provinces. In addition, the NFA has established and is providing K15 million over 5 years to a credit scheme via the National Development Bank for fishers in maritime provinces and for aquaculture operators in the highlands.

4.3.3 The NFA - Missing in Action on Sea Bed Mining

Community and provincial government representatives held high expectations for the NFA to fight to protect the interests of maritime communities at risk from Solwara 1. Interviewees expressed disappointment that instead of being a key player, the NFA was *"missing in action", "dysfunctional" or "politically controlled".*

Indeed the NFA interviewee, stated that the:

"NFA has been silent on Solwara1 since the project's inception" in terms of public comment and that it is yet to develop a position paper on SBM indicating clearly "is it Yes or No?"

This staff member would personally like to be more outspoken and believes there are many ambiguities that should be addressed before SBM occurs. He noted that the Government's objective is to make money quickly to fill budgetary gaps but that experience from other resource projects shows that the local people are worse off afterwards.

Whilst the NFA has been missing in action publicly, it has regularly engaged in closed meetings with Nautilus as a member of an advisory board along with the MRA, CEPA, Department of Mining and Geohazards, the Australian Commonwealth Science and Industry Research Organisation (CSIRO) and researchers from Australian and other universities. In this forum the NFA provides technical advice about fisheries and raises concerns about the impacts of Solwara 1. The interviewee shared meeting agendas and a *Nautilus Cares* fact sheet provided to the advisory board that contained simplistic diagrams and photos of equipment and nodules.

As with the CEPA and MRA, the NFA seem comfortable to accept Nautilus' public relations spin and regurgitate it by way of explanation. Thus this NFA manager believes that *"the word mining in relation to Solwara 1 is misleading"*. It conjures up images of destructive land based mines, whereas the approach Nautilus will employ is to cut out the gold nuggets embedded in the rocks and to carry these nuggets to the riser pipe where they will be sucked up. According to the interviewee, *"these gold plumes are all over."* This extremely inaccurate, clinically clean and non destructive process is described in the Nautilus Care's fact sheet provided to advisory board members.

The willful naivety displayed by the NFA manager is astounding especially in view of the scale and nature of the equipment being built - clearly designed to crush, dig, and grind the hydrothermal vents and sea floor.

Despite being relaxed about impacts on the sea floor, the NFA manager was concerned about noise pollution causing the disappearance of sea mammals and tuna from the Bismarck Sea. He also worries that the riser pipe may increase the temperature of the surrounding water due to the kinetic energy of the movement of the slurry through it. He believes such temperature changes could disturb the stratification of the water layers and sediment plumes carrying heavy metals near the sea floor could rise up through the water column and contaminate fish stocks. He concluded that *"Any problems here in PNG will be a problem for the Pacific region."*

5. PROVINCIAL POLITICS AND DECISION MAKING ABOUT SOLWARA 1

5.1 THE POLITICS OF SOLWARA 1 IN NEW IRELAND PROVINCE (NIP)

5.1.1 The Reign of Sir Julius Chan

The figure of two-times Prime Minister, Sir Julius Chan dominates government and decision making in NIP. Sir Julius served as PNG's second Prime Minister and is recognised nationally as one of the founding fathers of the independent state of PNG. In addition to the highest office in the country, he has held other influential portfolios such as Minister of Finance (twice) and Deputy Prime Minister (four times). The Sandline Crisis of 1997 leaves the biggest stain on Sir Julius' record as Prime Minister.[36] Forced to resign, he was unsuccessful in his bid to be re-elected to national level. After a decade at the head of his family business he returned to politics in 2007 as the Governor of NIP, and has *ruled* NIP since.

At the time of writing, NIP's two other members of parliament are Sir Julius Chan's son, Byron Chan (Minister for Mining) and Ben Micah (Minister for Petroleum and Energy, previously Minister for State Enterprise and Public investment). All three are members of the People's Progress Party (founded by Sir Julius) and the seniority of the portfolios held indicates the influence Sir Julius still holds. It's common knowledge in NIP that Sir Julius plans to contest the regional seat (for Governor) again in the 2017 elections, despite his 75 years and health problems.

A journalist and keen observer of NIP politics informed us that, *"when Sir J speaks people listen even if they disagree with him. He commands people's attention and is regarded highly due to his role as one of the founding fathers in PNG's transition from colonial times to independence. If Sir Julius is unhappy about an issue he calls a meeting and national ministers attend, even the PM! He requires the CEOs of the mining companies to meet with him regularly to provide updates."*

5.1.2 Sir Julius's Solwara 1 Dilemma

Sir Julius had initially publicly opposed the Solwara 1 mine but this had turned to an acceptance of the project by 2014. During this research, Sir Julius described himself as faced with a tough decision to balance risk with benefit. Despite professing his continued opposition to Solwara 1, he has chosen to not block the development of the mine. He has instead sought to balance risks with benefits by developing a MoU with Nautilus that focuses on 'containing risks'. He views Solwara 1 as an "opportunistic gamble" and hopes that time will show that he made the right decision. He acknowledged that "the safest decision would be to not go ahead with the mine but is that the best decision for NIP?" This is in line with statements he made while opening a classroom in a village that was visited soon after by the research team. Here villagers described that he expressed his dilemma by stating that he hadn't yet signed the MoU and that, "If I sign I kill children, if I don't sign I kill children."

Sir Julius' Provincial Administrator took a more simplistic approach stating that he believes the NIPG is taking a precautionary approach to the Solwara 1 mine via the conditions set out in the MoU. He doesn't anticipate that SBM will conflict with the UNCLOS as he considers it to be no different to oil and gas extraction. He anticipates minimal impact and disruption. "There's an active undersea volcano only 500m away from Solwara 1 and local communities do not see any evidence of it."

Sir Julius emphasised that decisions to license resource extraction projects rest with the National Government and that under the Organic Law he's forced to cooperate. He tries to squeeze as much as possible from these projects in terms of direct benefits for communities, tax credits and tax payments. His aim is to wean NIP off the overseas aid currently used to fund the province's development strategy set out in the Malagan Declaration of 2008.

According to Sir Julius, the MoU with Nautilus includes provisions on intellectual property rights, independent environmental monitoring and a liability guarantee that assigns financial and practical responsibility to Nautilus to respond to a disaster/accident. The NIPG has no capacity for disaster response and doesn't intend to develop it.

In reply to questions about whether the MoU is a public document and whether a copy could be made available to the research team, Sir Julius stated that the MoU "should be a public document" and

recommended meeting with his advisor Bruce Harris to discuss details and to obtain a copy.

On the question of how risk analysis was conducted, Sir Julius again recommended meeting with his adviser saying that he himself is not the "technical guy". He noted the difficulty of assessing the veracity of EIS and also of reports they have received providing negative reviews of the EIS,[37] *"how do you know who to believe".*

In relation to the requirement in the MoU for Nautilus to fund independent environmental monitoring, Sir Julius stated that civil society input would be welcome. However there appears to be no process to allow for this.

Sir Julius's stance in relation to Solwara 1 is complex. Some stakeholders feel that his initial opposition was a negotiating strategy to increase the *personal* and public benefits offered by Nautilus. Other stakeholders believe he was genuinely opposed to the mine. In addition there are several factors that contradict his assertion of being powerless to stop the mine under the Organic Law including the fact that his son is the Minister for Mining as well as the member for Namatanai; that Sir Julius would be guaranteed of the support of the other two elected members for NIP and the three of them would form a powerful block; that in discussion he reflected on the reasons why he decided to not block the mine ie: therefore acknowledging that this was a possibility; and that despite Sir Julius's economic rationale for Solwara 1, the revenue to be generated would be less than either of NIP's two existing mines (Lihir at K1 million/month, Simberi at K800,000/month[38]) which have yielded very little tangible development for communities. In addition, he advised that he has declared moratoria on further logging, land based mining and on new SBM exploration.

Several stakeholders believe that it is the Governor's advisor, who influences many of the NIPG's decisions, including about Solwara 1. Three interview appointments were agreed to by the adviser but he failed to attend any.

5.1.3 Organisation and Resistance to Solwara 1 in NIP

The reverence people hold for Sir Julius is consistent with local culture. We were advised that in NIP, respect for traditional chiefs is strong and people avoid confrontation. People who criticise leaders are ostracised.

One exception is Sir Julius' nephew, Walter Schnaubelt who is critical of the corruption and self-interest that robs NIP of the development and services it should have. Walter plans to contest the open seat of Namatanai (currently held by his cousin Byron Chan) for the fourth time in 2017. Other stakeholders have observed that he has a good chance of winning this time. Walter operates a rural extension service that provides training, oil palm seedlings and pigs, with a dose of political awareness. This includes strong encouragement for people to hold government accountable for the expenditure of revenue generated by mining and strong opposition to SBM. It remains to be seen whether Walter would maintain this stance on SBM if he were elected.

A stakeholder from NIP explained that because of the respect for chiefs, MPs commonly use them to gain the support of communities. In return, Chiefs commonly receive privileges and are sometimes on the public service payroll.

There is also a strong cultural attitude that only those who have a direct interest in an issue have the authority to speak about that issue. So only people close to the Solwara1 mine are viewed as having the right to speak out about it. One stakeholder reflected that all of these factors have resulted in the absence of a strong coordinated community response to Solwara 1. Even so, in 2014 when the NIPG hosted the national governor's conference, communities attempted to protest about Solwara 1 outside the conference but were prevented by police.

It was observed by several stakeholders that many community leaders on the west coast are inconsistent in their views of SBM and appear to be motivated by self-interest. One stakeholder described the reactions of the west coast communities as being "polarised at two extremes with some people strongly supporting Nautilus and others strongly against it." This stakeholder thought that those against are playing a strategic game of holding out for a large "goodwill" payment rather being genuinely concerned about the mine's impacts.

It was emphasised by several stakeholders that the west coast is very undeveloped with poor roads, in-

frastructure and services. We were told that, "People are worried about the possible impacts of the mine but at the same time are desperate for development."

5.1.4 The Solwara 1 Coastal Area of Benefit Program

Nautilus calls its corporate social responsibility (CSR) program *Nautilus CARES*, with CARES being an acronym for Community Accountable, Responsible Environmentally and Safe. The program has already started to deliver projects in NIP - two years earlier than legally required when production starts in 2018. Some elements of the program promoted by Nautilus include providing water and sanitation to 29 schools, combating malaria, promoting science in schools, providing schoolchildren with books and improving healthcare services (http://cares.nautilusminerals.com).

The MoU with the NIPG also includes the construction of bridges and roads. However one provincial government officer advises that during the January 2016 consultation, PNG operations manager admitted under the pressure of questioning, that the roads would only be "semi-permanent".

The delivery of CSR projects in NIP is confined to the *Coastal Area of Benefit,* which encompasses the LLG ward closest to the Solwara 1 site and 3 neighbouring wards in both directions along coast, being wards 2-6 of the Namatanai Rural LLG and wards 15 and 16 of the Sentral Niu Ilan LLG. These wards are indicated in the map below.

Nautilus calculates the "CSR spend" to be $491/person/year. NIP villagers note the disparity between this small amount and the profit the company will make with one villager expressing, "They take our minerals and give us latrines."

Nautilus conducted a community needs assessment within the area focusing on education/literacy, health, finance: employment, income and expenses and standard of living: housing, water and sanitation. This involved conducting over 1500 household surveys which included a question about whether respondents wanted Solwara 1 to go ahead. Nautilus boasts that 88% of respondents said yes and only 10% said no. However, as described to us, villagers thought they would miss out on benefits if they said no. It should be noted that such an approach is coercive and does not comply with Free Prior and Informed Consent.

Two members of Kono village both remember the household survey Nautilus Minerals conducted:

> *"They asked us all sorts of questions about how we live, what we eat, how much money we make and so on and at the very end they asked if we wanted the Solwara 1 Project and we had to answer yes or no. Most of us ticked YES. Then they came back and told us we are not part of the project but we said YES already."*

According to a contractor involved with the water and sanitation infrastructure, the "mantra" of the Nautilus CEO is to achieve "generational change" with respect to improving living standards. How well the program meets the aspirations of the local people is uncertain. In the opinion of a provincial government officer, the water and sanitation is of low quality construction and he questions why local builders weren't contracted instead of a business from the PNG highlands. He also noted that community members asked whether the program would assist them with small business development. As far as he's aware there are no such initiatives planned.

The criteria used to define the Coastal Area of Benefit are: closest communities to Solwara 1, focus area for NGOs and media, most viable area for local labour pool, areas with the greatest sense of ownership over project, communities with highest perceived risk from environmental disaster, population where available funding can make a difference.[40]

Furthermore, the CSR program is clearly viewed by Nautilus as a strategy to address landowner disquiet over the project. This has included threats to shut Solwara 1 down and to disrupt the delivery of CSR projects. To this end, Nautilus also recommends distributing 20% of the royalty payments to Coastal Area of Benefit.[41]

Thus it can be seen that Nautilus views the potential for civil unrest over Solwara 1 with some concern and uses the CSR program as a strategy to suppress opposition.

Indeed, the Nautilus CSR program has created divisions within communities over whether or not to

support Solwara 1, and between those communities receiving benefits and those who fall outside the coastal area of benefit. The latter worry that they will experience impacts from Solwara 1 but are not eligible for any assistance. Examples of they expressed their concerns were:

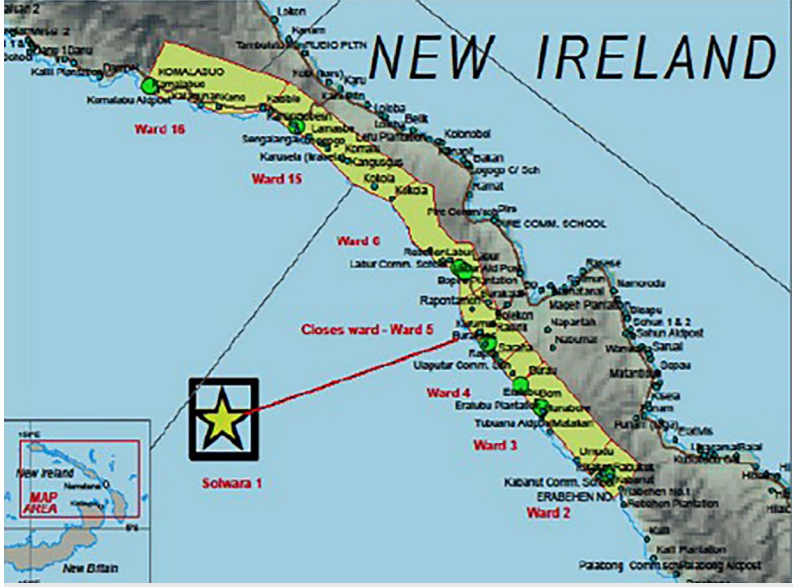
> *"We feel cheated and lied to. It is too late we have signed the papers and now we will sit and watch our deaths coming," said the men of Kono village.*
>
> *"With logging we were receiving royalties. We had money. Logging contributed to our church and kastom activities. With seabed mining we do not see the same. Nautilus Minerals told us two weeks ago there will be 200 jobs only. So there will be no jobs for our young people. Everything will be computerized and the minerals will be taken and sent to China, so there's really nothing there for us and our government."*

5.2 THE POLITICS OF SOLWARA 1 IN EAST NEW BRITAIN (ENB)

5.2.1 The ENB Provincial Administration and its position on Solwara 1

Whilst the administration of NIP was described by several stakeholders as a "dictatorship" or run like a "kingdom", ENB is governed through a government structure where the Governor and Provincial Administrator both play key roles and take advice from 3 deputy administrators. At the time of writing, the Deputy Administrators are allocated one of three portfolios:

- socio-economic services - ranging across industry, natural resources and human services;
- coordination and implementation - with a focus on LLGs and district administrations and
- corporate affairs - with a focus on institutional processes and disaster management



SOLWARA 1 COASTAL AREA OF BENEFIT[39]

The Governor of ENB, Ereman Tobaining Junior**,** was described by one stakeholder who works closely with him as consultative leader who sought advice prior to making decisions.

As in NIP, the Organic Law and the National Government were blamed for the decision to license Solwara 1. We were also told by a Deputy Provincial Administrator that *"due to PNG-style top down Big Man decision making, people resign themselves to decisions whether they agree or not."*

A senior government adviser involved with the MoU negotiating process asserted that, "There have been many bad decisions by the national government regarding resource projects. At the end of the day the national government will get its way and we're trying to maximise benefits for ENB.

On the issue of environmental impacts this same stakeholder conceded, "There will be some effect on the environment but how big we don't know. Sometimes you have to trust investors. Nautilus has too much at stake to lie to Government or make a mistake with risk analysis." This view was repeated by another stakeholder saying, *"Nautilus are keen to ensure this project proceeds with no problems as this will ensure their smooth entry into Solomons and Vanuatu".*

ENBP has suffered from the experience of the Sinivit Wild Dog Mine in the Bainings area. The Canadian listed company (New Guinea Gold Corporation) polluted the Warangoi River, and according to a senior Provincial staffer, defrauded the Government. The ENBPG closed the mine and is taking the company

to court. It was observed by the senior Provincial interviewee, that despite this, the company continues to make money on the stock exchange. He explained that due to this experience, the ENBPG have requested that the MoA under negotiation with Nautilus include a K10 million security fee to be held in trust in the province in case of an accident.

There is no capacity at provincial level for disaster response or independent environmental monitoring. One of the Deputy Provincial Administrators advised that the ENBPG is "at the mercy of CEPA and MRA" - the authorities with the mandate for environmental protection and enforcement. This informant added that the ENBPG wouldn't know if the Solwara 1 EIS complies with PNG legislation. He has never seen a copy of the EIS and its never been analysed at provincial level. He highlighted his concern that impacts may not be immediate and could show up in the longer term and stated that the "Environment should not be traded off against financial return."

Another Deputy Provincial Administrator explained that the ENBPG *"knocked at the doors in Waigani at the DEC and MRA seeking reassurances that there will be no impact to livelihoods or the marine environment, which they gave."* He himself is unsure of the impact, as this is the first SBM in the world. However, Nautilus' presentations have persuaded him that there would be minimal environmental destruction because there's life only at the top of the ocean, not at the bottom.

This Deputy Provincial Administrator highlighted that, "There's always a price to pay for development but it shouldn't exceed benefits."

These comments should be set in the context of ENBPG's 10 year strategic development plan, which includes SBM and other resource extraction projects as vital for achieving economic growth.

The ENBPG is participating in negotiations towards a MoA covering the interests and commitments of the ENB and NI Provincial Governments, the National Government and Nautilus.[42] It is not negotiating an additional MoU with Nautilus as is the case with NIP. The ENBPG have invited the NIPG to work together to achieve the best outcome for both provinces. However, the NIPG has been non responsive apart from the issue of royalties.

The allocation of royalties for Solwara 1 agreed under the MoA is 40:60% in favour of NIP due to the mine's proximity to NIP. Royalties for future SBM will be renegotiated depending on the location of the sites. The ENBPG has requested that projects to be provided by Nautilus focus on communication and the construction of mobile phone towers. They anticipate having new B-mobile towers by early 2017.

According to one of the Deputy Provincial Administrators, a key difference between the two provinces is that "ENB wants business opportunities in the form of contracts for services, not handouts".

The ENBPG is aware that "Communities have been jumping up and down about the project". He acknowledged that, "There is a need for more awareness and more studies into SBM." He stated that "many people in ENB were banking on the NFA to fight for them against the mine", as there are many commercial operators in the Bismarck Sea as well as registered village fishing groups and cooperatives in Manus, NI and ENB. He went on to explain that according to the NFA the Bismarck Sea is a significant breeding ground for tuna for the Pacific region. The ENBPG were hoping that the NFA would work with them to provide balanced awareness to communities.

The issue has not been raised with the ENPG through government structures and processes, The Provincial Government has never heard concerns expressed by LLG presidents on behalf of their communities.

Both of the Deputy Provincial Administrators noted that civil unrest is a real possibility if the project proceeds. "Tolai people have always stood up for their rights since colonial days with the Matuan movement for self determination. "

5.2.2 Organisation and Resistance to Solwara 1 in ENB

Whilst Solwara 1 is located closer to NIP, there has been a history of civil society concern and opposition to it within ENB. Three public forums were held on SBM from 2010 - 2012, attended by community representatives from ENB NIP, and Madang.

The 2012 forum resulted in a petition[43] that was hand delivered to the PM, ministers, the governors and elected members for NIP, Madang, Morobe, Oro,

West New Britain and Milne Bay Provinces. The petition highlighted areas of concern relating to: the rights of the coastal and island communities as indigenous peoples; the rights of seabed and other marine organisms to exist undisturbed; the risky and experimental nature of SBM; the possibility of a disaster caused by SBM; the lack of financial benefit to local communities and provincial governments; the absence of appropriate policies, laws, and regulations to safeguard and protect ocean resources and the health of local people; and the lack of capacity to conduct environmental monitoring. The petition was a strong and well thought out document and the Coalition hoped that the leaders who received it would present and discuss the petition in national parliament. However, this did not occur.

6. ENVIRONMENTAL RISKS

6.1 CONCERNS ABOUT IMPACTS

As described in earlier sections, many Government stakeholders were unconcerned about the impacts of Solwara 1. Senior departmental managers, in particular, showed very little interest in critically analysing the information provided to them by Nautilus. They were happy to repeat it as fact, despite its simplistic nature and the company's obvious vested interest.

None of the government interviewees were knowledgeable about the content of the Solwara 1 EIS and none had seen a copy. A small number of government stakeholders were aware of the independent reviews of the EIS but again did not seem informed about their content. Several government interviewees maintained there was no capacity at either provincial or national level to analyse the EIS. Dr Alan Marat, the elected member for Rabaul stated that: "Companies take advantage of PNG's lack of capacity with regard to analysis and science."

In contrast, community representatives and other non-government stakeholders showed a sophisticated level of understanding and felt offended by the "lies" Nautilus presented to them. Their legitimate questions about risks went unanswered during consultations and meetings with Nautilus. (See Section 7)

Below is a summary of the concerns non-government stakeholders expressed to the research team about environmental impacts.

Direct physical destruction: Several stakeholders raised concerns about the destruction of unique ecosystems. A UPNG lecturer explained that, "vents sustain complete ecosystems. Each vent is different from the next. We don't know the connections between deep sea ecosystems and those higher in the water column. By the time we see the impacts it will be too late to rescue the ecosystems and fisheries."

Noise: The St George Channel (in which Solwara 1 is located, between DoY island and NIP) is a migratory route for whales and skipjack and yellow fin tuna. In addition, sharks and dolphins breed and live in the Bismarck Sea. All of these animals use sound and other senses to guide them. Sound travels a long way underwater and many stakeholders fear that "the constant barrage of noise" from Solwara 1's 24 hour/day drilling and pumping operations will result in marine mammals and fish leaving the Bismarck Sea. Some scientific literature exists on this issue but has not been examined for its relevance to SBM.[44]

Heavy metal contamination: According to UPNG scientists and island communities, the St George Channel is very dynamic with many currents at different depths that could spread pollutants. The Channel is also characterised by strong upwellings, and seismic activity. Concern was expressed about plumes and heavy metal pollution resulting from mechanical failure and the inability of equipment to withstand conditions at depth. Heavy metal pollution of the food chain could occur via direct exposure and/or bioaccumulation through the consumption of smaller contaminated marine organisms.

Cyanide poisoning: Due to their experience of the impacts of land-based mines, many stakeholders expressed fear about cyanide poisoning. To the best of the research team's knowledge there will be no processing of the ore in PNG and thus no application of cyanide.

Pollution of beaches and inshore waters: Villagers in northern Duke of York (DoY) Island and west coast NIP frequently observe strong currents and winds in the St George Channel. Large logs and other debris are commonly washed up on their beaches from a long way away. They report that current moves rapidly in a circular fashion in the Bismarck Sea towards and beyond the Solwara site to New Hanover, then to Manus Island and back again. They are therefore concerned that they will be exposed to any pollution that is discharged from Solwara 1.

According to CSIRO's Ocean Forecasting Australia Model (OFAM3), surface currents in the eastern Bismarck Sea frequently flow to the southeast. Such currents could potentially carry dissolved or floating material (for example due to an accidental spill) from the Solwara 1 site to the Duke of York Islands in a matter of days.[45]

Acidity of the return water: A UPNG scientist noted that the water pumped to the surface with the ore slurry would contain high levels of hydrogen

sulphide. When this reacts with the oxygen in the air it will "be fizzing with sulphuric acid." Unless neutralised, the return water pumped back to the seafloor after the dewatering process could be expected to be far more acidic than the water taken from the sea floor.

Increased seismic activity: Several stakeholders also worry that mining disturbance in a seismically active area could result in more frequent volcanic eruptions and earthquakes.

6.2 CONCERNS ABOUT ENVIRONMENTAL MANAGEMENT

A common theme to emerge centered on the lack of capacity to monitor environmental impacts and to manage any accidents that may occur. Islanders feel especially vulnerable and they and others note that the Government has no disaster risk management plan for Solwara 1.

According to a senior provincial fisheries manager, there is no capacity within PNG to analyse heavy metal concentrations in seafood consumed by local communities. Samples would have to be sent to Port Moresby and then on to Singapore by which time they would be degraded. The Provincial Health Officer stationed on DoY Island was anxious about his inability to safeguard the health of the islanders and requested our assistance in identifying equipment to analyse heavy metal levels.

The lack of independent science was seen as a problem. One stakeholder informed us that granting exploration licenses to Nautilus deterred reputable scientific institutions from conducting research in the same area as they wouldn't want to be associated with a mining company. Professor Kaluwin of UPNG maintains that the National Government should have already started a program to collect baseline levels of heavy metal levels so as to have 2 years of data prior to the mine's scheduled start date.

Stakeholders highlighted the lack of scientific knowledge worldwide of: ecosystems and impacts; the cumulative effects of SBM in combination with other pressures on the ocean due to global warming; the marine food chains and the ecological relationships between organisms living in the deep sea and higher in the water column. One UPNG scientists commented that "Nautilus describes technology not science."

UPNG scientists commented on lack of due process explaining that that Nautilus should have been required to conduct a new EIS when the technology changed but the Government has allowed the project to continue under the original EIS.

6.3 RISKS TO CUSTOMARY USE OF THE MARINE ENVIRONMENT

> "*We own the sea as much as we own the land. We are masters of our sea, it's our garden, our domain. In our traditional belief system we communicate with spirits of the sea and spirits of the land. The Government denies our traditional rights and culture. This is our sense of identity - being eroded for dollars and latrines.*[46] *Ancestors have protected our land for everyone and we must do our bit to protect land and sea. Money is a westernised ideology for the benefit of a few*."
> (Central West Coast NI landowner)

> "*Customary laws and protocols are central to the very identity of many indigenous peoples and local communities. These laws and protocols concern many aspects of their life. They can define rights and responsibilities of members of indigenous peoples and local communities on important aspects of their life, culture and world view: customary law can relate to use of and access to natural resources, rights and obligations relating to land, inheritance and property, conduct of spiritual life, maintenance of cultural heritage and knowledge systems, and many other matters. Customary law can help define or characterize the very identity of the community itself*."[47]

As described to us, communities are fearful of the impacts Solwara 1 is likely to have on the fabric of their society. The marine environment is an intrinsic part of their daily lives providing nourishment, income and economic security. This is especially so in the face of land scarcity due to population growth and sea level rise. A healthy marine environment

holds out the hope of a future for themselves, their children and their traditions.

The connections that coastal communities in the Pacific hold with their marine environment are well documented by social anthropologists. Communities often have folklore tracing their ancestral links

to the sea and highlighting marine sacred sites. Some species of socio-cultural significance (e.g. dugong and turtle) are migratory and regarded as an intrinsic part of the seascape. Therefore, the community's connections to these animals and the marine environment may bear little resemblance to government-imposed boundaries.[48]

Our field research confirms that connections with the sea remain strong for the people of Madang, West coast NI and DoY Islands. Islanders spoke many times of their knowledge and familiarity of both their inshore environments and the deep sea. They repeatedly expressed that for them the marine and land environments are one continuous whole. According to one New Irelander, *"It is the same plate that we stand on that stretches into the sea. How can they tell us we are not owners or custodians of the sea? As custodians we watch over our sea ..."*

The NI tradition of shark calling is a powerful expression of the spiritual relationship with the sea. The rituals associated with it ensure the safety of the shark callers, their success, and the social cohesion that results when the catch is shared.

Through their own research work in the Bismarck Archipelago, scientists at UPNG were able to confirm the detailed knowledge islanders have of the deep sea, including around the Solwara 1 site. The scientists described that that islanders recognise and have names for different deep water zones which they have traditionally accessed even in dug-out canoes.

The relationship that DoY Islanders and NIP coastal communities have with the sea is very much alive and starkly contradicts Nautilus' assertions that the proposed Solwara 1 mine will not affect their food supplies, culture, spiritual and historical connections.[49]

In NIP, landowners have demanded to be recognised as traditional owners of the sea and to be included as signatories to the MoU held between the NIPG and Nautilus. They argue that since Solwara 1 was licensed under the land Mining Act that their sea ownership should also be recognised under the Landowner Act. They have requested a copy of the environmental management plans and a fund for compensation.

The NIPG Administrator was aware of landowner claims to ownership of the sea, but stated that these are not supported by law. Instead he offered that, "Landowners could work together with Government through Local Level Government and use their LLGs to negotiate on their behalf." In addition he doesn't anticipate any impact on artisanal fisheries as he believes that traditional fishing grounds only extend 1-2 km from the shore. Despite having a background in fisheries himself, he promotes the mis-information that coastal people would only paddle a short distance in traditional canoes and would never venture as far as the Solwara 1 site.

The recognition of sea rights was viewed with apprehension by the NFA officer interviewed, who was concerned that the royalty payments the NFA receives from commercial fishers may need to be shared or passed on to "sea-holders".

As outlined in Section 2.3.2 of this report, rights over water, reefs, **and seabed** are conferred to traditional owners under Section 5 of the Customs Recognition Act of the PNG constitution.

The denial of the rights of communities in relation to Solwara 1 by Nautilus and the National Government would appear to be in breach of the PNG constitution.

Questions regarding customary rights were also raised by UPNG researchers in relation to genetic resources. They believe that Nautilus has taken deep sea specimens out of PNG and ask, "Where are they stored? What is being done with them? Under what agreement was access to them granted to Nautilus? If pharmaceuticals or nutraceuticals are developed will benefits be shared with PNG and the local communities?"

Such concerns are addressed in the Convention on Biological Diversity (particularly Articles 2 & 15-20) to which PNG is a signatory. These issues are also raised

in the 2006 review conducted in PNG on Access and Benefit Sharing.[50] It is not clear what formal arrangements have been put in place by the National Government in response and how these have been enacted in relation to deep sea resources.

Roadside fishing stall in Kokopo with prices ranging from K10-40 (USD3-14)per fish. Photo: Helen Rosenbaum

6.4 RISKS TO FISHERIES

Fisheries form the most important source of income to the coastal communities of ENB and NIP and provide their main source of protein. The NFA invests a lot of money to support fishing cooperatives and local fishing groups. Many of these have benefited from the grants and infrastructure provided by the NFA and have become self reliant. Income earned from fishing has allowed cooperatives to expand and individual fishers to improve their living standards.

Despite the significance of fisheries to the maritime provinces bordering the Bismarck Sea, there are no policies or laws protecting the rights of artisanal (small scale) fishers and fishing cooperatives against access to their fishing grounds being restricted by SBM, their fish stocks being reduced by SBM, or their seafood being contaminated by SBM.

Many fishers question the logic of the National Government supporting them through the NFA while at the same time approving Solwara 1. In NIP fishers pointed out that it is illegal for them to use 'poison rope' to stun and help them catch reef fish. They ask,

"If Nautilus poisons our fish, what is going to happen?"

One village fishing cooperative outside Kokopo township began with a small loan from the National Development Bank and now has 76 registered fishermen and more than 300 beneficiaries in total (including their family members). Some co-operative members fish using dug-out canoe and some motorised boats. The latter leave from Blanche Bay (Rabaul) and go as far as Wide Bay and Lassul. The cooperative plans to establish a fish market next to the Kokopo-Rabaul road and to purchase a bigger fishing boat that can go further afield to fish in the deep water around Solwara 1. According to the managers, "We are investing a significant amount of money that will be at risk if Solwara 1 damages the marine environment."

The ENBPG have also invested a lot of money to develop local fisheries in line with the Provincial Government's 2050 vision of a thriving fisheries sector. The ENB provincial fisheries adviser warns that fish stocks are already under pressure, as determined by the distance required for fishers to travel to catch large fish and the reduction in the size of the fish commonly sold at the Kokopo market. He's concerned that any extra pressure will worsen the situation.

UPNG scientists highlighted that neither the Government or Nautilus have conducted social and health impact studies for Solwara 1 and that such studies should have been an essential component of the EIS prior to the Government issuing the licence.

At a national level, commercial tuna fishing in the Bismarck Sea makes a significant contribution to PNG's economy. The NIP Fisheries Adviser notes that a strategy is needed for the management of tuna in relation to SBM. He notes there is a risk that SBM could affect subsistence and commercial fisheries. He explains that a substantial investment has been made in trialing the ultra low temperature snap freezing of long line tuna for the sushimi markets in Japan and Korea. The project is a joint venture between provincial and national fisheries and Nui Guini Islands sea products. It's expected to be expanded as a fully commercial venture providing direct local employment with a fleet of 10 ships and large on-shore freezer storage capacity.

{LEFT] Map of local fishing ground and fishing routes at the Solwara 1 site. {RIGHT] Boy fishing, Mioko, Duke of York Islands. Photo: Natalie Lowrey

The NIP Administrator generally dismisses concerns about the impacts of Solwara 1, but acknowledges that the mine site is within the migratory route of tuna and the operations could alter the path.

Many fishers raised the concern that their access to the Bismarck Sea could be restricted by SBM. It was impossible to gain a clear response on this issue from any of the Government stakeholders interviewed. Nautilus, the National Government and some senior provincial government officials maintain that the Solwara 1 site is too remote to be visited by local fishermen.

However, this claim is discredited by fishers. The fishing grounds of the DoY and west coast NIP communities are illustrated on the map below as extending from the Lassul and Open Bay areas of ENB, to Wotam Island, across the St George channel (crossing near Solwara 1) to west coast NIP near Kait village and then circling back to ENB at Kambubu (Tokara airport), and around to the south east of NIP and Wide Bay. The ENB provincial fisheries adviser confirms the accuracy of this information.

These routes were described as being traditional as well as those currently used by fishers from DoY, NIP and ENBP. Fishing grounds are expanding with population increase and pressure on fish stocks resulting in the need to travel further to catch large fish.

It is significant that the fishing grounds encompass the Solwara 1 mine site. Deep water fish such as tuna are caught at the Solwara 1 site and reef fish are caught at nearby reefs such as Paradise Reef.

6.5 RISKS TO TOURISM

The National Government has identified Kokopo as a tourism hub and the East New Britain Chamber of commerce have recommended significant investment in infrastructure if this is to become a reality.[51] It would appear that some of this investment has already borne fruit, as Kokopo is thriving with modern buildings, upgrades and extensions to existing accommodation, a new well organised market place, new shops offering a wide range of products, and many more cars on the road. During the research visit preparations were being made by tourism operators and bus drivers to receive a cruise ship.

In addition both Kokopo and Kavieng offer marine based eco-tourism experiences that contribute to the economies of provincial and local communities. For example, villages are cooperating with top end resorts to generate environmentally friendly forms of income. Such projects have the potential to expand with benefits to both the small and large-scale operators.

One resort operator fears that Solwara 1 will put their income and the tourism income earned by villages at risk - both due to the impacts of Solwara1 on the marine environment and its cumulative impact in combination with other developments. For example, the Rabaul port is to be replaced by a much larger facility in Kokopo Bay which is used by a pod of up to 400 dolphins as a nursery and training area for juveniles. Dolphins and whales have sensitive sonar. It is possible that Solwara 1, in conjunction with the port development, will drive them away from the Bismarck Sea.

7 SELLING THE PROJECT - CONSULTATIONS

> *"They come with their stories about technology and lack of life at the sea floor. How do we know if we can trust them? There is no proper awareness from the company and no two way discussion with government. Landowners are reduced to being spectators and are blocked from decision-making. There are many unanswered questions - how will the revenue be spent, who will they benefit, why is the ore being shipped off. Those of us next to the benefit zone fear impacts from Solwara1 but we will gain no benefits."*
> (Amalgamated comments from a group of central west coast NIP landowners.)

Nautilus has been conducting two joint community consultations annually since 2008 with national and provincial government departments. The consultations, which are a condition of their lease, are co-funded by Nautilus and the National Government and facilitated by the MRA (as described in section 4.2.2).

To the time of writing, the consultations have focused on the west coast of NIP, particularly the Namatanai region which is closest to the Solwara 1 site. Public forums have also been held in the towns of Kokopo (ENBP) and Kavieng (NIP). Thus there is much overlap between the focus area for the consultations and the Coastal Area of Benefit on the NIP west coast (see Section 5.1.4).

The descriptions of consultations provided by interviewees suggest that Nautilus views consultations and their CSR program as tools to manage opposition to Solwara 1. However, the findings of this research suggest that their approach to consultations is fuelling resentment and opposition.

Villagers in NIP noted that during consultation meetings there is no clear separation between Government and the company. They question the impartiality of the Government and whose interests the Government really represents.

One provincial government officer who frequently attends the NIP consultations stated that the Government and Nautilus team are typically "bombarded with questions about how Nautilus will mitigate impacts but people aren't satisfied with the responses". DoY Islanders commonly referred to the information presented by Nautilus as "one-sided spin about benefits" that didn't address the concerns they raised.

Provincial government officers are in a difficult position when accompanying Nautilus on the Solwara 1 awareness tours. They would like to speak "frankly and boldly" during the presentations but, as one senior manager revealed, his staff are careful about what they tell communities in case Nautilus sues them. He is also hesitant to speak about the risks of Solwara 1 as he's not confident of his knowledge.

Our own experience of visiting communities confirmed the sophisticated and clear articulation of their concerns. Villagers are informed about the technology Nautilus plans to use from the consultation meetings as well as Nautilus brochures and public forums. They draw on their experience of land based mining disasters in their own provinces, in Bougainville and at the Ok Tedi mine, and even knowledge of accidents worldwide such as the 2010 Gulf of Mexico oil spill.

Nautilus country manager, Mel Togolo visited DoY Islands with a team in 2008. A very large meeting was held at Kibil Station with people attending from all over the island. Mel Togolo was told strongly by young and old alike "NO to seabed mining". However, DoY Islanders state that they heard from people on Wotam Island that Mel Togolo informed them that DoY supported Solawara 1. Until March this year (two weeks after the research team's visit) there had been no follow up visit by Nautilus.

The account provided by the MRA interviewee who accompanied Nautilus on their recent visit to ENB confirms the one-way communication (see Section 4.2.2). In response to concerns expressed about environmental damage the Team provided reassurances about equipment performance and information pamphlets.

People also felt that their concerns are not seriously addressed at the public forums held in the towns. One ENBPG manager commented that, "Everything is pre-decided. People can ask questions but these aren't taken seriously". His opinion is that Nautilus holds the forums to fulfil obligations. He advised that the ENBPG was supposed to run a public forum on Solwara 1 last year but cancelled it to avoid conflict.

8. CONCLUSIONS

The Section below highlights key findings from this research.

8.1 RESOURCE GOVERNANCE

Resource Companies Self Regulate

Resource governance in PNG currently exists on paper only. Political control by vested interests dominates decision-making and regulatory processes. Checks and balances are discarded in favour of self-interest and resource companies are left to self-regulate. In relation to Solwara 1, Government stakeholders failed to demonstrate a level of understanding about risks and the importance of risk analysis equal to their level of responsibility.

Solwara 1 was Licenced in a Legislative Vacuum

The Solwara 1 Project was issued with its Environmental Permits and 20 year mining lease in the absence of a legislative and regulatory framework for SBM and without policies or laws that offer recourse to formal processes, or protection for affected parties from the impacts of SBM. This situation leaves maritime communities and marine oriented business operations in a very vulnerable situation. This is especially so, given the experimental nature of SBM.

8.2 THE RESOURCE ECONOMICS OF SOLWARA 1

Nautilus is a High Risk Venture in a Financially Precarious Situation

Nautilus faces significant technological and financial uncertainties which may result in the company reducing or terminating its proposed operations. In addition, Nautilus is yet to demonstrate that seafloor resource development is commercially viable and environmentally sustainable.

The Nautilus Annual Information Form for the Fiscal Year ending 2015 highlights the potential for equipment damage, mechanical failure and operational failure and warns of the low level of confidence that should be placed in its projections of yields and costs for Solwara 1. It has insufficient funds to complete, test and deploy the Seafloor Production System, requiring up to an extra US$175 million. The Annual Information Form advises there can be no assurance that additional sources of finance will be available to the Company.

Nautilus' Business Strategy is to use the Bismark Sea as a Testing Ground

According to Nautilus' 2015 Annual Information Form, the company's management considers it in the company's best interests to test the operational viability of the Seafloor Production System at the Solwara 1 project rather than to conduct a preliminary economic assessment, pre-feasibility study or feasibility study. The Form also acknowledges that the actual impact of any SBM operation on the environment will also only be determined by such testing.

These admissions formally confirm what community members and activists have asserted for some time, that Nautilus and the PNG Government are using the Bismarck Sea as their testing ground and that Solwara 1 is indeed Experimental Sea Bed Mining.

Lack of Financial Due Diligence

The business case for Solwara 1 is extremely weak and the risks for the Government of PNG are very high. The business case was not assessed by PNG Treasury and Nautilus has not conducted standard economic assessments.

By entering into a joint venture with Nautilus, the National Government has failed to manage state finances and PNG's natural resources in the best interests of Papua New Guineans. In deciding to finance the state equity partnership, the Bank of the South Pacific (BSP) has also exposed itself to a high level of risk.

8.3 CONSULTATION AND BENEFITS

Nautilus views the potential for civil unrest over Solwara 1 with some concern and uses consultations and their CSR program as tools to manage opposition. To date, the consultations and CSR have focused on the west coast of NIP, particularly the Namatanai region which is closest to the Solwara 1 site.

Nautilus' approach is fuelling resentment and opposition. People are frustrated at the "one-sided spin"

that fails to address their concerns and at the disparity between the profits Nautilus will make and the benefits that will accrue to the communities that will experience the impact of the project.

One effect of the Nautilus CSR program has been to create divisions within communities over whether or not to support Solwara 1, and between those communities receiving benefits and those who fall outside the coastal area of benefit. The latter worry that they will experience impacts from Solwara 1 but are not eligible for any assistance.

Solwara 1 will also yield little in terms of the benefits that Governments would normally anticipate from a mining project. The sea-rights of local communities are not recognised and thus they are not party to the MoA and would not receive benefits and royalties they would from a land based mine.

8.4 ENVIRONMENTAL CONCERNS

PNG lacks the capacity to monitor and manage environmental impacts and to respond to any accidents that may occur. For example, there is no capacity within PNG to analyse heavy metal concentrations in seafood consumed by local communities.

The lack of independent science was seen as a problem for environmental management of Solwara 1 as was the lack of scientific knowledge of: ecosystems and impacts; the cumulative effects of SBM in combination with other pressures on the ocean due to global warming; of the marine food chains and ecological relationships.

This research identified three spheres of interest that are particularly vulnerable to potential impacts from Solwara 1: customary rights to use the marine environment; fisheries; and tourism.

Customary Rights

Nautilus and the National Government may breach the PNG Constitution by denying the rights of maritime communities over water, reefs, and seabed. These rights are conferred to traditional owners under Section 5 of the Customs Recognition Act.

This section states:

> *custom may be taken into account in relation to . . . the ownership by custom of rights in, over or in connection with the sea or a reef; or in or on the bed of the sea or of a river or lake, including rights of fishing; or the ownership by custom of water, or of rights in, over or to water* (*see National Assembly of Papua New Guinea, 1975*)

Customary rights over access and benefit sharing may also be a relevent consideration in relation to the genetic resources of deep sea specimens that Nautilus (or associated scientists) have already taken out of PNG or may take out in the future.

Risks to Fisheries

The Solwara 1 sites lies within the fishing grounds of the DoY Islanders and west coast NIP villagers, and along the migratory route of tuna. There has been much investment in the development of small scale and commercial fisheries by Governments, fishery cooperatives, fishing groups and individual fishers. Despite the significance of fisheries to the maritime provinces bordering the Bismarck Sea, there are no policies or laws protecting the rights of these fishing interests against access to their fishing grounds being restricted by SBM, their fish stocks being reduced by SBM, or their seafood being contaminated by SBM.

Risks to Tourism

Significant investments are being made to realise the National Government's goal of developing Kokopo into a national tourism hub. In addition, businesses in both Kokopo and Kavieng offer marine based eco-tourism experiences that contribute to the economies of local communities. There is opportunity for these environmentally sustainable forms of tourism to expand with benefits to both the small and large-scale operators. This low impact form of income generation is under threat by Solwara 1.

ENDNOTES

1. https://masalai.wordpress.com/2012/03/28/a-review-of-the-judicial-conduct-bill-2012
2. A comprehensive and intelligent discussion of this is contained in Scott, B 2005 Re-imagining PNG : Culture, Democracy and Australia's role. Paper 09, Lowy Institute for International Policy
3. eg: Paul Cleary, 2011, PNG powerbrokers snap up property, 29 Jan 2011 The Australian, https://pngexposed.wordpress.com/2011/01/29/png-powerbrokers-snap-up-property/
4. Scott, B 2005 Re-imagining PNG : Culture, Democracy and Australia's role. Paper 09, Lowy Institute for International Policy, p vii
5. World Bank Group work in low-income countries under stress: a task force report 2002, http://www.eldis.org/static/DOC18211.htm; Department for International Development, Why we need to work more effectively in fragile states 2005, http://www.dfi d.gov.uk/pubs/files/fragilestates-paper.pdf. p 7; AusAID, Handle with care: fragile states Focus, June–August 2005
6. http://fsi.fundforpeace.org/rankings-2015
7. In addition to Solwara 1, Sir Julius is concerned about the logging and oil palm plantations occurring under SABL
8. Hugh Govan, Jeff Kinch and Alexandre Brjosniovschi, 2013 Strategic Review of Inshore Fisheries Policies and Strategies In Melanesia: Fiji, New Caledonia, Papua New Guinea, Solomon Islands And Vanuatu, Part ii: Country Reports for Melanesian Spearhead Group Inshore Fisheries Working Group, p23
9. Gunson, R 2015, EITI Preparing for Greater Transparency in the Mining Sector Presentation to the Institute of National Affairs (INA) 23/9/'15 http://www.inapng.com/pdf_files/EITI%20-%20Preparing%20for%20Greater%20Transparency%20in%20the%20Mining%20Sector_ver.2.pdf
10. https://ramumine.wordpress.com/2016/03/10/foreign-mining-companies-very-concerned-about-changes-to-mining-act/
11. Govan et al. 2013 Strategic Review of Inshore Fisheries Policies and Strategies In Melanesia: Fiji, New Caledonia, Papua New Guinea, Solomon Islands And Vanuatu, Part ii: Country Reports for Melanesian Spearhead Group Inshore Fisheries Working Group, p23
12. As per the 1992 Convention on Biological Diversity and its 2010 supplementary agreement the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization
13. John Asafu-Adjaye, (2000),"Customary marine tenure systems and sustainable fisheries management in Papua New Guinea", p 922, International Journal of Social Economics, Vol. 27 Iss 7/8/9/10 pp. 917 - 927 http://dx.doi.org/10.1108/03068290010336856
14. http://energy-pubs.com.au/png-resources/maritime-boundaries-certified-with-new-sea-zones-law/; Note: The Maritime Zones Act declares information about PNG's territorial sea baselines, maritime zones and the outer limits of its EEZ, in accordance with the Law of the Sea. Under this Act PNG is negotiating new treaties with other Pacific Island Countries to extend its EEZ.
15. http://www.petrominpng.com.pg/news/Solwara%201%20Project%20Completion%20paves%20way%20for%20project%20to%20commence.pdf
16. The 2015 Annual Information form is lodged with the Canadian Securities Administrators - see http://www.nautilusminerals.com/IRM/PDF/1735/AnnualInformationFormforfiscalyearendedDecember312015
17. Listed in Annual Information Form 2015, p33, http://www.nautilusminerals.com/IRM/PDF/1735/AnnualInformationFormforfiscalyearendedDecember312015
18. http://moocs.southampton.ac.uk/oceans/2015/10/05/ventmining_shareholders_contractors/
19. Mohammed Al Barwani may be a self proclaimed "Dr" as his MB holding profile advises that he holds a Bachelor's Degree in Science and a Master's Degree in Petroleum Engineering. This research did not explore the associations of the other board members and the connections of the other companies to Nautilus.
20. http://www.mawaridmining.com/nautilus.html
21. For details of the sales agreement refer to the Annual Information Form 2015, p19-20 http://www.nautilusminerals.com/IRM/PDF/1735/AnnualInformationFormforfiscalyearendedDecember312015
22. John Pundari granted the license to Nautilus while he was Mining Minister.
23. http://www.pina.com.fj/?p=pacnews&m=read&o=208701351651bfbd32eb1901a0b0bc
24. Described further in Rosenbaum, H (2011) 'Out of Our Depth: Mining the Ocean Floor in Papua New Guinea', MiningWatch Canada, CELCOR PNG and Oxfam Australia, http://www.deepseaminingoutofourdepth.org/wp-content/uploads/Out-Of-Our-Depth-low-res1.pdf
25. Cardno acquired the Australian consultancy firm Acil and the entity appears to now operate under the single name Cardno
26. Professor Chalapan Kaluwin of UPNG made a personal visit to the Secretary of the Environment Minister to obtain the independent review. He was told that there was only one hard copy of the independent review and it was too long to photocopy.
27. Gunson, R. 2015, EITI: Preparing for Greater Transparency in the Mining Sector Presentation to the INA 23/9/'15 http://www.inapng.com/pdf_files/EITI%20-%20Preparing%20for%20Greater%20Transparency%20in%20the%20Mining%20Sector_ver.2.pdf
28. The MRA has overseen a study into environmental management in mining, funded by the EU and World Bank with consultants from the Adam Smith Foundation.
29. Gunson, R. 2015, EITI: Preparing for Greater Transparency in the Mining Sector Presentation to the INA 23/9/'15 http://www.inapng.com/pdf_files/EITI%20-%20Preparing%20for%20Greater%20Transparency%20in%20the%20Mining%20Sector_ver.2.pdf
30. 2015 Annual Information Form, p 25, Appendix 2
31. http://www.mra.gov.pg/AboutUs/DevelopmentCoordinationDivision.aspx
32. Gunson, R. 2015, EITI: Preparing for Greater Transparency in the Mining Sector Presentation to the INA 23/9/'15 http://www.inapng.com/pdf_files/EITI%20-%20Preparing%20for%20Greater%20Transparency%20in%20the%20Mining%20Sector_ver.2.pdf
33. http://www.fisheries.gov.pg/FisheriesIndustry/FisheriesPotential/tabid/245/Default.aspx
34. Hugh Govan, Jeff Kinch and Alexandre Brjosniovschi, 2013 Strategic Review of Inshore Fisheries Policies and Strategies In Melanesia: Fiji, New Caledonia, Papua New Guinea, Solomon Islands And Vanuatu, Part ii: Country Reports for Melanesian Spearhead Group Inshore Fisheries Working Group, p26
35. ibid. p33

36. After attempts to negotiate a peaceful settlement to the Bougainville conflict failed, Sir Julius contracted the Sandline International company of mercenaries to bring the conflict to a rapid if violent end. Sir Julius was forced to resign amidst national and international condemnation and the arrangement was dismantled before it could come into effect.

37. These other reports would have included those produced by the DSM campaign and Professor Richard Steiner which were forwarded to Bruce Harris over the past few years. During the period that Sir Julius publicly opposed Solwara 1, Bruce was in frequent dialogue with the DSM Campaign, but he avoided meeting with the research team.

38. Walter Schnaubelt, pers. comms

39. Nautilus Minerals, Powerpoint Presentation (Forging Ahead) to New Ireland Nautilus Minerals Working Group Meeting 30 July, 2015

40. Nautilus Minerals, slide 24, Powerpoint Presentation (Forging Ahead)to New Ireland Nautilus Minerals Working Group Meeting 30 July, 2015

41. Nautilus Minerals, slide 25, Powerpoint Presentation (Forging Ahead) to New Ireland Nautilus Minerals Working Group Meeting 30 July, 2015

42. MoAs are described in Section 3.2.1

43. The petition stated "This petition is our statement of concern of the peoples and communities of ENB province against any sea bed mining in the waters of ENB and within and near the New Guinea Islands Region of PNG."

44. Eg: Tyack, P, 2009 Human-generated sound and marine mammals. Physics Today Nov 2009, American Institute of Physics

45. Personal Communications 25/02/'16 Dr. John Luick, Oceanographer, Austides Consulting.

46. In reference to the Nautilus sanitation projects.

47. World Intellectual Property Organization, 2013 Customary Law, Traditional Knowledge and Intellectual Property: An Outline of the Issues

48. John Asafu-Adjaye, (2000),"Customary marine tenure systems and sustainable fisheries management in Papua New Guinea", International Journal of Social Economics, Vol. 27 Iss 7/8/9/10 pp. 917 - 927 http://dx.doi.org/10.1108/03068290010336856

49. Nautilus makes this claim repeatedly in public relations material and it forms a key element of their Environmental and Social Benchmarking Analysis released in 2015.

50. Access And Benefit Sharing: Policy And Legal Implications for Papua New Guinea, Report for the Papua New Guinea Institute of Biodiversity October 2006

51. http://www.businessadvantagepng.com/tourism-potential-in-kokopo-rabaul-huge-if-infrastructure-needs-are-met/


deepseaminingoutofourdepth.org