

## Introduction

Not only have the oil, gas and mining industries not helped the poorest people in developing countries, they have often made them worse off. Scores of recent academic studies and many of the bank's own studies confirmed our findings that countries which rely primarily on extractive industries tend to have higher levels of poverty, child morbidity and mortality, civil war, corruption and totalitarianism than those with more diversified economies. Does this mean extractive industries can never play a positive role in a nation's economy? No, it simply means that the only evidence of such a positive role we could find took place after a country's democratic governance had developed to such a degree that the poorest could see some of the benefits. Before the fundamental building blocks of good governance – a free press, a functioning judiciary, respect for human rights, free and fair elections and so on – are put in place, the development of these industries only aggravates the situation for the poorest

---Dr Emil Salim, Chair of the World Bank funded  
Extractive Industry Review (UK *Times* 16<sup>th</sup> June 2004)<sup>1</sup>

### Sustainability for Papua New Guinea

*Nancy Sullivan*

Sustainability is a balancing act with a triple bottom line. Now that Papua New Guinea is experiencing a resource boom, this is even more of a juggling act. As the world experiences food shortages, and Australia's economy remains buoyant by a stream of Chinese mineral investment, Papua New Guinea (PNG) is caught somewhere between being mineral rich and rice poor. Now is exactly the right time to talk about sustainability in development.

---

<sup>1</sup> See also the opening of Richard Steiner's chapter, this volume.

The term ‘sustainability’ is itself exhausted by examples, and a lot of the papers and powerpoints in this volume offer their own definitions, either practical or theoretical. In general, however, when the concept isn’t used in a cost-benefits sense, it is most often meant to refer to the Brundtland Commission’s 1987 definition as development that meets the needs of the present generation without compromising the ability of future generations to meet their needs.<sup>2</sup>

The contributions to this volume come from an August 2007 symposium at Divine Word University called ‘PNG’s Prospects for Sustainable Development.’ People from various dispositions attended and presented either a power points or paper, which is what makes this volume so eclectic. Some of the powerpoints are denser than others, more technical than usual. Because we make no claims to expertise here, and believe that presenting industry material to the general public is part of the process of creating sustainability in Papua New Guinea (PNG), we have only edited

---

<sup>2</sup> Compare the International Council on Mining and Metals (ICMM) Sustainable Development Principles:

1. Implement and maintain ethical business practices and sound systems of corporate governance.
2. Integrate sustainable development considerations within the corporate decision making process.
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.
4. Implement risk management strategies based on valid data and sound science.
5. Seek continual improvement of our health and safety performance.
6. Seek continual improvement of our environmental performance.
7. Contribute to conservation of biodiversity and integrated approaches to land use planning.
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.
9. Contribute to the social, economic and institutional development of the communities in which we operate.
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.

them for size, leaving as much data as possible for readers. Naturally, specialists in different fields are more comfortable speaking in the vernacular, and conducting discussions in their own publications and forums, but what we really need now in PNG is a way to bring this Babel together in more inclusive conversation. We must learn to read each others' work, speak each others' languages, and operate under the professional ethics of transparency and best practice that we advocate for others.

One of the earlier chapters, for example, is an excellent review of the concept of sustainability itself, by Dr Eric Kwa. It is important to have this bound together with case-specific papers as an historical touchstone, even though it is an excerpt from a longer PhD thesis that could benefit being published separately.

Although this volume has a particular focus on the mining industry (mostly because of the way the cards fell), there are a few chapters that broaden the discussion in very important ways. **Bryant Allen's** chapter, for example, walks us through the spectrum of threats to sustainability in PNG, and looks closely at food security and the unpredictable factors that fall outside a cost-benefit analysis: too much rain, land degradation, pests, diseases, climate change, volcanic eruptions, landslides, earthquakes and tsunamis, to name a few. But threats to sustainability are also influenced, he says, by social indicators like population growth, lack of cash, poor governance, poor economic policy, bad infrastructure, HIV/AIDs and law and order. These all contribute to the viability of a project. At a time when the world faces more and more food shortages, the factors that support food security in PNG are that much more important. It makes sense to us now, as we know that Vietnam placing an embargo on rice exports suddenly makes the life civil servant that much more expensive. It also changes the cost-benefit analysis for the villager who may be displaced by a mining or logging project.

Sometimes this looks like chaos theory--where a butterfly wing in Brazil brings on tornadoes in Texas. Unsustainability on a global level is a macro version of chaos theory. The deforestation that kills a butterfly in Brazil leads to land degradation and greenhouse gas emissions that bring on global warming, sea level rises and weather changes—hence tornadoes in Texas. Butterfly wings, like wildfires

in Indonesia, crop failures in Belgium, typhoons in Vietnam and droughts in Australia, bring the force of particle physics home. What is a changing climate but another form of quantum indeterminacy?

### Resource curses<sup>3</sup>.

One of the points made by **Paul Barker** in his chapter here is the danger of trading short term benefits for long terms costs, and he refers to national economic planning in particular.. This is a lesson learned from so many agro-forestry projects which, he says, “have merely proven over the years to be log extraction projects under the guise of agriculture, avoiding proper forestry project planning and oversight.” The result is long term costs well beyond the means of a developing nation. Only patience, wise counsel and technological efficiency can make short term gain enhance resource extraction

---

<sup>3</sup> According to Wikipedia.org, the Resource Curse (also the Paradox of Plenty) “refers to the paradox that countries with an abundance of natural resources tend to have less economic growth than countries without these natural resources. This may happen for many different reasons, including a decline in the competitiveness of other economic sectors (caused by appreciation of the real exchange rate as resource revenues enter an economy), volatility of revenues from the natural resource sector, government mismanagement, or political corruption (provoked by the inflows of easy windfalls from the resource sector).”

Sandra Kloff (this volume) provides the following definition: Without the right precautions extractive industries may distort the macro-economy, a phenomenon which is also known as the Dutch disease (the term originated in Holland after the discovery of North Sea gas). Its basic symptoms are that the manufacturing sectors e.g. agriculture, fisheries, and locally made goods decline, and in the worst case these sectors may even disappear. The root cause of this so-called “*deagriculturalisation*” or “*deindustrialisation*” is that boom revenues derived from the extraction of mineral or hydrocarbon resources raises the value of a nation's currency to such a degree that non-extractive industry goods become less competitive with other nations resulting in increased imports and decreased exports (Investor words, 2007). One way to stem the Dutch Disease is to not bring all the revenues into the country all at once, but to save some of it abroad in special funds and to bring them in slowly (easier said than done in the developing world).

prospects for the future. Selling short today will mean selling nothing tomorrow. Mining and logging provide a surge of wealth in one sector of the economy that can also cripple other sectors. When the currency rises to the point where exports are uncompetitive, and imports plummet, the country is suffering from a full blown case of Dutch Disease.

But macroeconomic health is not about homeostasis, it is about growth--whether it be massive growth, as in China, or modest growth, in PNG, where projections for the national economy are a 6% growth through 2009. Economic growth will always strain to outweigh the other two bottom lines of sustainability: the social and the environmental cost/benefits. China, for example, is on its 11<sup>th</sup> Five Year plan, with projections for even more supernatural commercial expansion. The country's capital awakening, however, has come with an insatiable appetite for commodities. Thanks to this, mineral extraction stocks are also soaring, having themselves become hot commodities in the race to service the demand. Rapid Chinese industrialization has even impelled a number of gigantic mining industry mergers. Vale's quarterly earnings have grown tenfold since 2002 (in part thanks to its takeover of Canadian rival, Inco<sup>4</sup>), and now they've set their sites on Xstrata, another major competitor.

Rio Tinto's share price almost doubled in 2007 alone (thanks to a takeover of Alcan, an aluminum firm), and now BHP is trying to acquire it to expand its own iron-ore business. The bigger the company, the better economies of scale: BHP reckons it can save \$3.7 billion (US) over seven years by acquiring Rio Tinto. As yet, Rio Tinto has resisted, but China is now trying to block the deal as well. Sinosteel gobbled up Australia's Midwest Corp. Iron Ore by hostile takeover. Now Chinalco, the state-owned parent of the country's biggest aluminum company, has come together with the American aluminum giant, Alcoa, to try to buy a 9% stake in Rio Tinto that hopes to thwart the BHP move (although it has not worked thus far.) (*Economist* 9.February 2008:58; *Economist* 15 March 2008:9). In this food chain, even the big companies are krill. Today you might be majority owned by an Australian company,

---

<sup>4</sup> —which, by the way, runs the Goro Nickel project in New Caledonia (See the Kanak delegation and Techa Beaumont's powerpoints here).

tomorrow you're in a joint venture with the Democratic Republic of Congo. Down on the ground, landowners' hold small stakes but still believe they have a voice. In fact, their futures are being shuttled from one boardroom to another, from one corporate entity that believes in landowner participation to another that does not. Madang residents have learn this lesson in the Ramu Nickel transition from Highlands Pacific to the China Metallurgical Construction Corporation (MCC)..

### **Curses with political implications**

China's reach into mineral industries across the globe has been fraught with political implications. The country's extensive involvement in African mineral resources has raised eyebrows in the west, and not just on Wall Street. Not everyone is worried. In the words of one Congo MP, Mr Kikaya, China's growing presence should encourage Western governments to drop their "patronizing attitude, that we know what's best for you." (Ibid 15 March.2008, p 12)

In this unpredictable global economy, even the normal patronage relations have changed. PNG has a history, for example, of having its knuckles rapped by international bankers. The IMF warned Papua New Guinea in 2007 that its natural resource sector dominance has hindered other sectors of the economy, (*PNG Resources Issue 2* 2007:100-102), which came as no surprise. But combined with the soured Australian-PNG relations, one could hardly blame the undertone of indignance when, by late 2007, the Somare government declared PNG's renewed determination to become self-reliant. A November *Post-Courier* piece reported that Somare had

announced that the Government intends to ensure that Papua New Guinea's economy gains self-reliant status in the next five years. ...Because of mining policy incentives, some 50 mineral exploration licences were approved in the past year. About K430 million in taxes from the resource sector is anticipated for 2007. Obviously, confidence in the mining sector is the perceived trigger for economic self-reliance. (*Post Courier* 28 November)

Some might say economic self-reliance is an illusion. But the declaration is always political. Recently, the Autonomous Region of Bougainville began to entertain new investors in Panguna's copper operations (including Australian junior explorer Ord River Resources Limited and its Chinese backer China Non-ferrous Metals International Mining Co Ltd [CNMIM] [Annual PNG Industry Overview 2008:20]). In response, the National Government got a bit tetchy, one might even say patronizing about this. ARG President Joseph Kabui was talking about a division of royalties that would give 20% to the landowners and 80% to the local government and nothing to the central government. "But the PNG government is worried, regardless of the financial implications," reports *The Economist* (9 February 2008: 31), "that the inexperienced ABG will be hoodwinked by the unscrupulous international mining companies waiting in the wings."

## **Governance**

May 26 2005 Prime Minister Somare's speech at the closure of Misima Mine, (delivered by Minister for Mining, Sam Akoitai), commended the mine for its model closure plan. Produced through collaboration between all stakeholders, it's lessons "will be taken on board and applied by other mines including Ok Tedi and Porgera that are in the process of planning for their respective closure." The closure included a number of development projects for Milne Bay Province that Placer Dome and Misima shareholders were to leave in place for government management (Somare 2004). Less than four years later, the island of Misima has fallen on hard times.

When a mine closes, it's a lot like the circus leaving town: everything's ripped out and packed away, leaving electrical wire, rusting dozers and machinery, gaping holes in the earth, hundreds of skilled and suddenly unemployed people, and thousands of families left somewhere between a cash economy and their fallow gardens. In Misima, proposed a hydroelectric plant never materialized, but the loading dock and other infrastructure are left to decay. Late in 2007 the National Government was forced to allocate K20 million as a form of aid to Misima in its recent budget. (Smare 2007:120). Who neglected whom?

Only governance can prevent extraction revenues from distorting the macro economy. With poor governance, the argument cannot be made that a national economy requires the sacrifice of a few local ones, because it is not the national economy being served. The Resource Curse means a few get rich and the rest grow sickly. But if the mineral markets are really ballooning, those countries like PNG afflicted with a Resource Curse are being doubly weakened. Every potentially well-managed resource extraction project could mean that much more for the local and national economy, that much more for the long-term development prospects of everyone from market woman to MP. This is the kind of economic health **Paul Barker** talks about in his contribution here.

**Sir Peter Barter**'s contribution makes the most practical structural suggestions on how to improve governance in PNG. He has two major points: that Limited Preferential Voting has slowed the swinging door of Members of Parliament so that they can now get their work done; but the risk is also greater than ever of entrenched 'clientism' and self-service. MPs should not be administrators of their home Districts, he says, as this complicates loyalties and alienates segments of their electorate. He also recommends tourism as the most sustainable of PNG's industries, with constantly renewable resources and infinite local spin-offs.

**Margaret Thomas** presents the AusAid perspective, and writes about creating an 'enabling environment for sustainable government' through improved leadership and decision-making. Poor leadership erodes predictability, she says; and this limits investment. Natural resources account for 61.7% of PNG's GDP, which makes the country particularly vulnerable to the Resource Curse and its attendant corruption. She cites the World Bank's Pacific 2020 report, which pinpoints clientism and fragmentation as the two governance challenges for the region. Clientism is a universal term for wantokism; whereas fragmentation refers to short term and narrow vision, reflecting the kind of high MP turnover of which Sir Peter speaks.

**Joe Murphy**, the US Regional Environmental Officer based in Suva, writes about the long term benefits of resource projects properly managed: with patience and planning they can avoid the compressed revenue streams of mineral booms.



He also suggests that PNG take the lead in environmental regulations. As the largest and arguably most influential Pacific Island country, one whose Exclusive Economic Zone (EEZ) is critical to the life-cycle of several commercially important marine species, PNG should use the Forum Fisheries Agency to advocate for “strong, science-based and balanced conservation and management measures, as well as effective monitoring, control and surveillance mechanisms to ensure compliance with them.” It would be farsighted and symbolic. On the other hand, he says, PNG must close the gap between policy and practice in so many industry matters. One way would be to factor into cost recovery scenarios more realistic assessments of a project’s administrative burden. Be frank about what it will cost the government in infrastructure and management. Another way is to commit to full transparency on company transactions, as for example the Extractive Industries Transparency Initiative (EITI), which he describes.

The EITI is not unlike Publish What You Pay (PWYP), an NGO coalition that **Rebecca Iwerks** describes in her chapter. She says of the mineral extraction industry in PNG that, “[w]ith such large revenue streams, linked to such a small percentage of the nation’s workforce, one may assume that the citizens of PNG would be beneficiaries of a government with ample ability to provide for its basic needs.” Think again. What’s missing is revenue transparency, so no one is really held accountable. And this should apply to corporate as well as government ledgers. The more the public knows, the more reliable is your ‘social license to operate’ and meaningful is public participation.

**Mike Manning**, of Transparency International, reminds us that the reasons PNG enjoys macroeconomic stability and growth are not wholly of its own making. Commodity prices have made the difference, and only reasonably good budget management, he says, has kept us from Dutch Disease. At the same time all the World Bank’s Governance Indicators show PNG on a downward slide. And while the economy is growing, it is doing so at a slower rate than others in the region and still depends overmuch (27%) on the extractive industries. If we don’t swallow the bitter pill of better governance now, we may never shake the Curse.

It recalls the famous quote by Earl Long, an ex-Governor of Louisiana in the United States. ‘Someday Louisiana is gonna get good government,’ he said. ‘And they ain’t gonna like it.’

Managing Director of Ok Tedi Mining Ltd, Alan Breen, has been relatively transparent about the cost-benefits of continuing to mine at Ok Tedi. “As we progress deeper into the Mt Fubilan orebody mining becomes more complex,” he says. More complex means less profitable, and more dangerous. This is because the “sulphur content, predominantly associated with pyrite, increases significantly beyond 2008. The future impact ...on the Ok Tedi and Fly River system would be too great for the river system to tolerate.” Acid Rock Drainage reports that began to emerge in 2005 have shown that the damage this far is probably “greater impact than previously thought,” he confirms. (Annual PNG Industry Overview 2008:36). In light of this admission, the work of **Musje Werror**, Executive Manager of the Ok Tedi Development Fund, has gotten that much harder. His chapter here, called ‘Ok Tedi: Our Project, Our Challenge’ walks us through some of the environmental problems that will be OTML’s legacy, and the development projects introduced to help compensate the communities. The problem, he points out, is the province’s inordinate dependence on the company, after a long history of government disappointments. Before them lies the Herculean task of formulating a Mine Closure Plan.

In light of the environmental risks now posed by mining at Ok Tedi, some of the principle landowners have reconsidered early mine closure. One, for example, says "we are now considering the risks that our lives are in." The company has revised their initial compensation packages to reflect these sobering assessments. Thus, the original Faustian contract signed by landowners and the government of Papua New Guinea when BHP first pulled out, and mining was allowed to continue, has just become less attractive. And yet, when the Mining Minister Sam Akoitai, Finance Minister Bart Philemon and Minister for National Planning Arthur Somare visited the project and saw for themselves the environmental impacts, they did not talk about immediate closer. Instead, they negotiated for increased environmental protections, protections that are considerably ex post facto now. The Ministers were reportedly in agreement with themselves, if not with OTML, that the mines

benefits still outweighed its costs. (*Post Courier* 3-4 November 2007) <http://www.postcourier.com.pg/20071105/mohome.htm>

It is precisely because the people with the most at stake, often have the least information to make decisions, that the Publish What You Pay Coalition strives to make the all company decisions as transparent as possible. **Rebecca Iwerks** writes here that countries well-endowed with natural resources tend to have poor public wellbeing. She talks about the importance, and difficulty, of implementing a standard, audited mechanism for ensuring resource revenue transparency.

### **What is Best Practice? Best Available Technology?**

According to Wikipedia ([www.wikipedia.com](http://www.wikipedia.com)), one definition of Best Practice is the assertion that one “technique, method, process, activity, incentive or reward that is more effective at delivering a particular outcome than any other technique, method, process, etc.”

By applying the method commonly assumed to be the most efficient of most effective one is expected to minimise unforeseen complications. This will reduce environmental risks and foreseeable social objections. But in the extractive industries, where everything is big---big holes, big swathes of land, big trucks, big camps, big money---this expression can be a very big smokescreens. In an article on the advanced technology employed for Ramu’s proposed submarine tailings disposal, we search for details and find, instead, that “MCC-JJJ’s chairperson and president, Madam Luo Shu, told PNGIndustryNews.net she intends to make sure that the controversial deep sea tailings emplacement program incorporates the best available technology” (Gomez 2008).

**Sandra Kloff**’s chapter here discusses industry efforts to formulate universal standards for environmental management. She says that those adopted by the International Organisation for Standardisation (ISO) are intended to preclude the use of cheaper material, insufficiently trained personnel and/or environmentally damaging techniques. Combined with government initiatives, these are important building blocks for environmental sustainability. These standards would constitute a version of ‘best practice’ or ‘best

technology' that would be mutually recognizable between projects. The window of opportunity for insisting on best practice, Kloff says, is during project planning, and she provides lessons learned from offshore oil drilling in Mauritania.

### **The Precautionary Principle**

The Precautionary Principle says that measures against a possible hazard should be taken even if the available evidence does not treat that hazard as a scientifically established fact. In this sense, neither Best Practice nor the Precautionary Principle are moral principles, but principles for decision-making that can be justified either on moral or prudential grounds.

Ramu NiCo press releases tell us that 5 million tonnes of tailings per year will be piped from the Ramu Nickel Project's Basmuk refinery in to a deep ocean outfall about 150m below sea level. From here they are expected to flow down the sloping seafloor to settle on the floor of the Vitiaz Basin. A March 2008 article in PNGIndustryNews.net, for example, assures us that the project's developer aims to lower all environmental impacts (Gomez 2008).

Since taking over operations, Ramu NiCo Management has ...spent \$US1.2 million on environmental baseline surveys... Other engineering companies that have collaborated in engineering, process and manufacturing studies include Hatch (Canada and Australia), Dynatec (Canada), Brass (US), Pipeline Systems Inc (US) and Monsanto Chemical Engineering (US) and Enesar Environmental Engineering (Australia). Two Chinese companies have also been involved in technical studies – Shanghai Morimatsu Pressure Vessel and the Beijing General Research Institute of Mining & Metallurgy.

It is important to note, though, that baseline studies are nothing more than preliminary readings. Environmental impacts are measured against the baseline, not precluded by the success of gathering basic data.

**Dr James Wang's** powerpoint details the company's projections on how the tailings will be disposed, and again describes the amount invested in baseline studies. His symposium presentation

was supported by Ramu NiCo colleagues **James Topo** and **Ninkama Yoba**, and constituted the first public discussion of the company's environmental plan. "Environment is a top priority for the developer (MCC)," the powerpoint tell us. Because submarine tailings disposal is new, there is very little real data on its long term safety. Several independent reviews of the plan suggest otherwise. But Dr Wang's presentation tells us the Department of Mining's Green Paper on Sustainable Development Policy uses the Ramu plan as a model. All mine processes are to be conducted "[i]n accordance with good industry practice." Moreover, the proposed community benefits "include big and major road networks linking other provinces, technical institutes and vocational centers, creation of industrial centers, etc."

In the preparation for this symposium one of the industry representatives took a look at the invited speakers list and asked the organizer (in so many words), 'Why not just line us up and shoot us?' All these forums look NGO-heavy because there are few other mechanisms to bring corporate and civic voices together. During the symposium, though, speakers held their ground and there was as much consensus as dissension. Only Dr.Wang's presentation looked especially vulnerable, and this was because of the language barrier. Unfortunately, not even his PNG colleagues could allay the nervous frisson in the room that came from having a controversial project only partially explained.

### **Can we pick and choose environmental studies?**

Ramu Nickel (NiCo) has inspired a flood of public concern. At the time of the symposium the updated environmental plan was yet to be passed, but the earlier plan submitted by Highlands Pacific had been passed and yet widely savaged by critics. The PNG National Fisheries Authority initially stated "the Ramu Nickel mine project is an unsustainable project, socially, economically and environmentally and cannot be allowed to proceed... mining tailings dumped into Basamuk Bay will gradually create food losses to Papua New Guinea's rich and renewable fisheries resources of the Bismark Sea." ([www.mpi.org.au](http://www.mpi.org.au))

The first report raised big questions. Dr Tom Wagner, an American scientist at UPNG, reviewed the plan at the request of the department of Environment and Conservation, only to find that

tailings that were toxic to marine life had inaccurately been classified as non toxic, and that contrary to the suggestion that tailings would be permanently stored on the sea bed, tailings solids will likely release metals and unknown toxins throughout the life of the mine and for many years afterwards. (Ibid)

Scientists from James Cook University, Flinders University, UPNG and the Australian Institute of Marine Science found that the company's plan was "so inadequate that no realistic assessment of the mine's impact can be made", and that the environmental impacts "are significantly greater than the company has indicated, including the contamination of local reef systems and parts of Astrolabe Bay with mine waste." (Ibid)

In the absence of the universal environmental management standards Kloff refers to, it looks very much like companies can pick and chose the impact assessments they like.

**Techa Beaumont's** powerpoint summarizes some of the conclusions from the Mineral Policy Institute's own study, "Ramu Nickel: A preliminary review of the risks facing the Ramu catchment." In addition, she discusses the country's abysmal lack of compliance to any precautionary principle with regard to mine tailings management, noting also that private companies have also been granted exemptions on PNG environmental laws. On the other hand, there have been successful community action campaigns against submarine tailing disposal, and she points to Goro Nickel in New Caledonia as an example. At Goro the community forced the mining company to raise the cost assessment of their disposal plan, and at considerable expense, change it (cf, the New Caledonia delegation powerpoint).

### **Social license and social curses**

A 2006 a volume of *The Contemporary Pacific* edited by Paige West and Martha MacIntyre (Vol 18 No 2 2006) and dedicated to Mining in Melanesia, has an Introduction by Colin Filer and Martha MacIntyre (Filer and MacIntyre 2006). Their discussion of the resource curse reminds us of some of the consequences not easily included in the cost-benefit analyses, but ones that, in PNG, often come back to bite a project. They are paraphrased as follows (Ibid:217):

- In political terms, the [resource] curse involves an intensification of conflict between actors on the national (or even international) stage who are competing with each other for access to the resource rents generated by this kind of industry.
- In cultural terms, the curse involves the development of unrealistic hopes and expectations, by people who do not presently derive any benefits from this kind of industry, that new discoveries will put them on a par with those who do.
- In environmental terms, the curse involves a degree of long-term damage done to the natural environment, which outweighs the short-term economic benefits obtained by a minority of the affected project.

In other words, the resource curse itself puts pressure on ‘social license’ because it raises expectations unrealistically. The World Bank definition of social license is “acquiring free, prior and informed consent from indigenous peoples, and local communities through mutual agreements” (www.Mining.com, April 2008, p.20). In blank slate situation, this kind of consensus may be possible, but in PNG it would be hard to find impact communities without preconceived ideas of mining/logging benefits packages. Even well-published industry consultants like Richard B. Shepard believe real consent is a fairytale. He even argues that the standard be lowered.

There is no basis to believe that this situation will change, so we need to find an alternative, practical, acceptable definition. We propose the definition of ‘social license’ to be a comprehensive and thoroughly documented process to have local stakeholders and other vested interests identify their

values and beliefs as they participate in scoping the environmental impact assessment of the proposed project and on identifying alternative plans of operations for the project. *Notice that this does not stipulate the community, stakeholders, and other groups approve of and support the project. Such universal acceptance is virtually impossible, and not required in any other aspect of our economic, social or political lives.* (Ibid, emphasis added)

This is rational. It reminds us that resource projects become juggernauts anyway. Apparently oil and gas projects need to guarantee four times the expense of initial exploration to be viable. No one invests millions of dollars in research and exploration only to pack up and move on when a site is found marginally viable. Investors need a return. This is a point Mel Togolo made during the symposium, with respect to objections being raised to projects after the exploration investment has already been made. This is precisely when a project becomes inevitable, he said. The moment of flexibility is much earlier on, even though the public rarely has enough information at the start. Shepard puts it more cynically:

[E]nvironmental NGOs like to present [social license] as having the local community give its consent to a project before the mine can be permitted or developed. There is evidence that this latter perspective is as much a myth as the so-called Precautionary Principle (Ibid).

The solution for Shepard is to calibrate the values of all the stakeholders in a calculation of the ‘social license’ for a given project. This strategy would shear any and all subjective data of ambiguity, which is a feat in itself. In risk assessment terms, how do we rate community ambivalence? Can we call lack of consent a negative value on a point scale? Is 51% agreement then sufficient? And most importantly, when do we seek consensus?

On the other hand, there are ways to insert public opinion into the process before it becomes a juggernaut. For example, **Dr. Richard Steiner**, advocates a form of Citizens Advisory Council that has been effective in Alaska following the Exxon Valdez oil spill in 1989. In a letter to the CEO of Nautilus Minerals (written after the symposium), he points out that “[a] few public hearings, a few



company handouts, power points, and annual reports, etc. do little to address the many issues of public concern with any extractive industry project...” (Steiner 2008, pers. comm).

He proposes that, for the Nautilus Solwara Project (described by Mel Togolo here), they establish a Bismark Sea regional Citizens Advisory Council (RCAC). This would represent all stakeholders and be “fully funded for the potential lifetime of the project, have permanent staff, and be independent from government or industry.

The Bismarck Sea RCAC should have the funds to provide technical review of any and all documents with regard to your project ..., have full time staff to interact with your company regularly, and would serve as the “eyes, ears, and voice” for citizen stakeholders...And I would suggest that any decision to proceed with the project should wait until agreement is received from the RCAC, thus granting your Social License to Operate. (Steiner 2008)<sup>5</sup>

Expensive prerequisite, or wise investment? It will certainly inflate the research/exploration budget, potentially tipping the juggernaut farther. But the appeal of the Nautilus Solwara project (which is exploring the Bismark sea floor for minerals) is its efficiency, the cost-effectiveness of operating offshore the way oil exploration

---

<sup>5</sup> Oxfam Australia’s Mining Ombudman project advocates a more explicit principle of free, prior and informed consent (otherwise known as FPIC) , the components of which they define as follows:

**Free** refers to the general principle of law that consent is not valid if obtained through coercion or manipulation.

**Prior** refers to meaningful, informed consent sought sufficiently in advance of any activities by a company.

**Informed** means that the process must involve consultation and participation by Indigenous peoples with full disclosures of a development activity in accessible and understandable forms to affected peoples and communities. (www.Oxfam.org.au)

does. The technology for Seafloor Massive Sulphide (SMS) extraction is not new, **Mel Togolo** explains, but it is cutting edge. All the big costs are cut: no open pits, and economies of scale are better because the production facilities are floating and mobile. You can take the same rig on to the next site. It is the next generation of mineral extraction, a potentially benign way of harvesting very high grade ore with minimal environmental impact.

There are serious doubts about the safety of tailings being processed on a rig in choppy seas, and tailings disposed of onshore are still fraught with terrestrial dangers. But we must consider that this is an efficient and safer means of mineral extraction, and because it is still in the exploratory stages, we have a chance to make a difference in project planning. Given the right fora—advisory councils, ombudsmen, or the EITI---and wide public participation, Solwara could be a model project.

Without Citizens Advisory Councils, Mining Ombudmen, or any other formal recourse, impact communities are often left in the dark until well beyond the point of flexibility. The Ramu Nickel Project has been around for some time, and abandoned by its first developers, Highlands Pacific, before MCC stepped in to salvage it. **Johann Smid**'s contribution here discusses some of this history in a review of the objections to this project produced by the Evangelical Lutheran Church (ELCPNG) (see also Kaiok 2008 for ELCPNG's attempts to petition the National Government).

Madang residents have been aware of the Submarine Tailings Disposal plan (the STD of Resource Curses?) for some time now. The National Fisheries Authority and the Minister for Fisheries have lodged strong objections based on the potential impact the STD will have on Madang's critically important tuna industry. Some of the Pacific region's most important tuna breeding grounds are found in the Bismark Sea, and any disturbance of the sea floor will have disastrous ecological and economic consequences. You need not be a marine biologist to know that the Continental Plate volcanic trenches on that seafloor contain a veritable rainforest of biodiversity, and it serves as food for the entire marine system.

Back in 2005 members of the project's 40 impact communities signed an open letter to Ambassador Li Zhenjun, Embassy of the People's Republic of China, and Mr Yang Changheng, President, China Metallurgical Construction Corporation (MCC), and sent it to the *Post-Courier* (20th October 2005). They were taking the only recourse available to them.

We write to you as landowners who are the rightful customary owners of lands and resources along the Rai Coast and Ramu River. We wish to formally notify you of our opposition to the Ramu Nickel project and to give you notice that we will be taking all legitimate measures to prevent the project from proceeding... We have not been consulted, we have not given our consent and we will not give our consent for this project to proceed. We will not let it access our lands, or its pipelines to cross our lands. We will not allow limestone to be removed from our land and we will ABSOLUTELY NOT allow waste to be dumped into our ocean or rivers. ...Let us be very clear - we will not allow you to risk our children's future for your profits and if you choose to proceed with plans for Ramu Nickel we will be forced to take action to prevent your illegal and destructive mining project.<sup>6</sup>

There are comparisons to be drawn between the Ramu Nickel controversy and the history of nickel extraction in New Caledonia. The symposium was privileged to host a delegation from New Caledonia, comprised of: **Georges Mandaoue**, Member of the Customary Senate from the area of the Koniambo mine; **Regina Nonmoira**, from the mining town of Thio; **Jean-Guy M'Boueri**,

---

<sup>6</sup> The tone of this letter, which differs from the Steiner letter quoted above, more closely echoes the letter Prony activists in New Caledonia sent to the country's Canadian High Commissioner in August 2002, regarding the proposed Goro-Nickel project to be almost exclusively owned by the Canadian company, Inco. That letter said that the exploration permit had been granted despite "formal opposition from the indigenous people," rendering it "in violation of all the principles adopted by the international community concerning the protection and promotion of the rights of indigenous peoples" and urged the High Commissioner to "act to prevent any unrest that might result from the attitude of the executive of the Southern Province by interceding with the latter in order to make him change his mind." (Horowitz 2004:304). The difference here, as one sees in Techa Beaumont's powerpoint contribution this volume, is that peaceful negotiation ultimately won environmental protection and better profit share in the Goro case.

President of the Customary Senate and also from Thio; and **Jean Charles Akougny** of the Goro tribe's Council of Chiefs. Inhibited by language barriers, they were a symbolic presence and presented the powerpoint overview, reproduced here, of nickel production in New Caledonia, and its tense relationship to the Kanak struggle for independence.

New Caledonian nickel, King Nick (or *le Roi Nick*), is the elder statesman Melanesian mining. He is over 100 years old, and has long been the locus of Kanaky aspirations of autonomy.. The country's main island, Grand Terre, has enormous mineral wealth (some say between 10 and 40% of the world's nickel lies beneath it's surface) and it has enriched a handful of politically and economically powerful French families. Unlike Papua New Guinea, New Caledonia has no legislation requiring royalties or compensation to customary landowners, nor are such payments regularly demanded by villagers (see Henningham 1992:74-76). Without formal or informal participation, the local frustrations are inevitably wrapped up in issues of freedom, not just from France, but from the machinations of the industry itself. **Jean Charles Akougny**, for example, spoke during the symposium of the 5 year struggle his people has led against the multinational Canadian mining giant Inco Ltd (now owned by the Brazilian company Vale, or CVRD [Companhia Vale de Rio Doce], as noted above).

Social license certainly means something very different for New Caledonia than it does for Papua New Guinea. Yet one of the great ironies of the global mining industry has a Brazilian company (Vale) posing a threat to Jean Charles Akougny's Goro land and people, while Brazil itself has begun to take umbrage against the moves of international environmental organizations to lay claim to some of its own valuable real estate (as discussed below). If social license has one strong plank it would be democratic governance. Some might argue that customary land tenure is even more important, but the very fact that West Papuans, like Kanaks, are disenfranchised in their own State, makes the concept of consent fatuous. We see that not simply in the uneven relations and assumptions of entitlement between mining companies and the people they displace, but also in the ironies of industry economics itself, where the global market makes strange bedfellows of States

and corporate entities. Imagine issuing t-shirts to all the PNG Basamuk and Krumbukari workers saying 'Free Tibet.'

If the National Government could only exhibit as much concern for Madang Province as it appears to have for ARB in the re-opening of Panguna, we might be assuaged a bit. Instead the Ok Tedi experience remains a frightening spectre. Recently the head of the PNG Evangelical Lutheran Church, Bishop Wesley Kigasung, and the Fisheries Minister, Ben Semri, expressed public concern over the inevitability of the project. Minister Semri said he was determined to prevent the tailings from being piped into Basamuk Bay and said this declaration will be "a test of his will and the value to the Government of the massive Chinese investment" (*Post-Courier* 11 April 2008).

Is Ramu another juggernaut? A *Post Courier* editorial of 28 November 2007 (online at <http://www.minesandcommunities.org/Action/press1694.htm>), astutely observes that "[c]urrently, the presumption is that, because an ore body or petroleum resource is found, there exists an inherent right to mine it...Little mental energy is put into understanding the non-monetary value of the environment, or alternative developmental strategies."

### **Macro trade offs**

With demand something like 50 percent higher than supply worldwide, the mining and gas industries are likely to be profitable for years to come. If we look at Paul Barker, Eric Kwa and Mike Manning's chapters together, we might conclude that a healthy macroeconomic strategy is where sustainability begins, because if you relieve the pressure on the economy to exploit all the available oil, gas, metals and timber, then we can turn away from high risk technology and poor social license to wait for less invasive technology. This is the moment to harness resources wisely, to wait on the minerals we cannot extract safely, and pour money into technology that will balance the triple bottom line.

The Ramu Nickel Project raises some very old-fashioned macroeconomic trade-offs. The commercial benefits may be irrefutable, and the communities lined up to benefit are certainly amongst the most development-neglected. On the other hand, its costs are potentially catastrophic. Even if, as the *Post-Courier* reports in an article titled 'Ramu: Tailings are safe' (15 April 2008) "[t]he Ramu tailing solid will firstly be neutralised and stabilised before disposal and soluble metals will be precipitated" ---there is no guarantee, and one roll of the dice may turn stable tailings into unstable toxins. "After neutralization," the article says,

the tailings will be discharged into a canyon 150 metres under the sea level, which is 70 metres below the deepest measured zone of sunlight (euphotic zone); 50 metres below the zone in which upwelling can occur and 30 metres below the deepest measure surface mixed layer of the ocean.

Critics say that, in practice, substantial quantities of waste will inevitably separate from the main tailings flow and form plumes of waste that will spread out across the ocean. Different currents can then carry these plumes into surface waters. The most serious problem is related to upwelling, the movement of deep ocean water to the surface of the sea. Under normal circumstances, upwelling is a productive marine processes because it provides food for fish and other animals. But it can also bring mine waste back to the surface of the ocean, where it is that much more dangerous to marine life (see <http://www.mpi.org.au/pubs/www.mpi.org.au/>)

Another unknown is whether the sea floor is sloped as sharply as Ramu NiCo contends. If, as some say, it is a gentler slope than predicted, tailings would not be pitched as deeply and could be caught in the upwelling zone. A constant stream of tailings into the ocean upwelling would certainly cause a chain of events only Rachel Carson could imagine.

Under normal circumstances, upwelling is one of the most productive marine processes because it provides food for the fish and is often the site of best fishing. Fine tailings would form plume shearing and float away from the main flow when caught between ocean layers. Plume shearing exposes heavy

metals to the food chain where fish either ingest tailing particles whole or take up leached metals through their gill membranes. It also increases turbidity and would drive away commercially valuable fish species. It also contains sharp and pointy particles that would damage fish skin and cause infection (Victor 2007).

The other question to be raised is whether disposing tailings on the seafloor would smother benthic organisms needed for the food chain. Could this reduce fish fertility, or kill enough fish to drive away the migrating tuna? If so, and we lose the European Union rating for PNG processed tuna, will this also drive tuna fishing boats (and their rental fees) from our EEZ? Will this mean the cost of a tin of tuna in PNG will shoot up? What about health---will the children of our children in Astrolabe Bay suffer learning disorders, or neurological tics? Will we have grandchildren who cannot fish, cannot find employment and cannot afford the price of Diana tuna? What happened to the Precautionary Principle?

These environmental and social risks are not just weighed against a corporate bottom line, but against the entire macroeconomic growth of PNG. Do we want to risk fisheries for minerals? This is where **Dr Bryant Allen**'s chapter is pertinent. He walks us through what a resource curse can do to the food security of the entire nation. Those who lose their gardens to the Basamuk refinery will enjoy a temporary ride on the cash economy, but it will be cut short by imminent food shortages across the globe and rising food prices at home. An industrialized nation is essentially a dependent nation, because its citizens no longer rely on their own gardens and oceans for food. If we neglect our agriculture and fisheries, we become that much more vulnerable to global crises. The landowner who signs away garden and hunting land for rice and tin fish suddenly becomes a member of the ruthless and volatile global market. *Sori tumas*, that's capitalism.

### **Stretim nau bilong tumora**

"When you approach sustainable development from an environmental view, the problems are global," says the U.N.'s Malloch Brown. "But from a development view, the front line is

local, local, local."  
(<http://www.time.com/time/2002/greencentury/enopener.html#>).

**Dr. Pak Sum Low**, Regional Advisor for United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) provides a powerpoint outline of the possibilities for ‘green growth’ and eco-efficiency in development planning. It begins with statistics on the region’s ecological scorecard—including some of the worst chemical spills, worst incidents of pollution, widest stretches of deforestation, and their economic and environmental price tags. Green growth, he outlines, is an alternative program of sustainable production and consumption which would include synergies between economic growth and environmental protection. Some of the charts and diagrams of Dr. Pak’s presentation are useful reference in their own right.

Environmental sustainability is no longer a local matter, and the entire globe is a stakeholder in every resource project. **Gaikovina Kula**, **Chris Margolis** and **David Mitchell**, of Conservation International (CI), explain some of the reasons why this is so, and remind us of the new responsibilities we take on in a climate change era. They ask a number of questions: How much is needed to sustain an ecosystem and nurture evolutionary potential? How do we measure biodiversity? For CI there are certain conservation targets, typically endangered species, geographic sites, and areas of land and ocean, that essential to preventing biodiversity loss. These are signature genes, species and ecosystems, they say, the ‘Key Biodiversity Areas’ (KBAs). KBAs are canaries in the global mine shaft, and by monitoring their health we stave off even greater disasters. KBAs are also measurable elements in any cost-benefit analyses for development. They can and should be part of macroeconomic modeling if we are to be clear about the real costs of exploiting natural resources, as the CI chapter illustrates.

Papua New Guinea’s Secretary of the Department of Environment and Conservation, **Dr. Wari Iamo**, contributes a very important chapter because it lays out some of PNG’s unique difficulties in negotiating sustainability for resource extraction. They are challenges that have occupied experts for decades, and they resist all facile solutions. Landowners often place development before environmental protections, Dr. Iamo points out, seeking short term



before long term gains, and this skews the triple bottom line for sustainability. Without CBOs and NGOs, we would very likely so no long term planning. Landowner shortsightedness is commonly blamed on a lack of government services, which leaves villagers hungry for any kind of development. But the first generation of industry-trained Papua New Guineans are now both policy planners and corporate leaders in resource development, and we must also rely on their wisdom to administer the brakes on the mineral boom and stabilize the economy. Dr. Iamo also notes that resource projects are expensive in sites with poor infrastructure. The demands placed on companies to step in for government are onerous, and not always met with sustainable solutions. So the government has a lot to account for in these equations. He also says that PNG relies overmuch on legislation to achieve sustainability, and to date this has had no effect. There are too many laws and too little compliance.

Dr. Iamo furthermore makes a strong plea for more training. It is only because the tertiary institutions were once functioning well that we do now have a generation of industry leaders. Many have gone from UPNG or Unitech to further industry-sponsored education overseas, and many of these are corporate leaders around the globe. The symposium was facilitated by Dr. Ila Temu, a perfect example, who has returned from running Placer Dome's Tanzania office to work with Barrick in PNG. But who is coming up behind these experts? Where is the training today?

### **Best Intentions are not Best Practice**

There are now hundreds of websites inviting well-meaning individuals to help save the world's rainforests by typing in their credit card details. This innovative conservation strategy takes on some dubious political overtones, however.

As the *Guardian Weekly's* John Vidal tells us (2008:25):

The World Land Trust, whose patron is Sir David Attenborough, invites you to buy a whole acre of Indian elephant corridor for \$100, or 2000msquared of the Chaco Pantanal in Brazil for \$50. WLT supporters have bought 350,000 acres

(142,000 hectares) in Britain since 1989—an area half the size of Derbyshire. If you have really deep pockets, conservation gets even easier. John Eliasch, the Swedish-born businessman chosen by the British prime minister to be his forest advisor, bought himself 400,000 acres of the Amazon rainforest for \$16m in 2006 and now asks supporters to help him buy tracts of Brazil and Ecuador.

The problem with Eliasch's charity, Cool Earth, which claims to have bought 32,000 acres, is that the Brazilian government considers it 'ecocolonial' and says Brazilians can manage their own forests, thank you.

President Lula da Silva declared that 'Brazil was not for sale', and a group of ministers wrote that the charity was attacking the country's sovereignty. These 'well-intentioned outsiders,' they said, 'were ignorant of the reality of the Amazon rainforest and should stick to trying to influence their own governments.' (Ibid)

But ecocolonials are sometimes reclaiming land otherwise ruined by neglect, bad planning and irresponsible development. But they are also driving up the price of land, and where people have customary tenure this presents one kind of problem. But where they have no title, this spells disaster.

Tens of thousands of people have been evicted to establish wildlife parks and other protected areas throughout the developing world. Many people have been forbidden to hunt, cut trees, quarry stone, introduce plants or in any way threaten the local animals or ecosystem. The land they have lived on for centuries is suddenly recast as an idyllic wildlife sanctuary, with no regard for the realities of the lives of who live there. (Ibid:25-26)

Tom Griffiths, who works with Forest Peoples Programme, reports that, "Carbon companies are already approaching communities, offering to strike deals so they can obtain carbon credits. We are very concerned." (Ibid:27)

In countries where customary landownership does not exist, the ‘land to the tiller’ movement driven by development economists like Hernando De Soto (2000) can be an effective antidote to the problem. If everybody owns the forests they can benefit directly from this ecological marketplace, whether they find themselves dispossessed or not. But Papua New Guinea requires much more sophisticated conservation for development schemes. Tim Flannery spoke in Port Moresby late last year about carbon trade proposals that actually rely on customary land tenure to secure overseas investment. Carbon sequestering is what he called it. Without the means to sell land to outsiders, there is less question of jeopardizing the sovereignty of the State. These would never be private or individuated transactions for first world pollution rights. Land would be leased as carbon sinkholes, just as incorporated landowner groups lease land today. Only the benefits would be manifold, storing carbon in ‘sinks’ across PNG and still permitting people to still garden and smallhold crops (Flannery 2007).

The Flannery talk did not overlook its economic benefits. It was mentioned that, by conservative estimates, a 10,000 hectare area of degraded grassland could actually yield K300,000 per year in carbon credit revenues. If part of this can be reforested in a smallhold project---like opkari nuit, or even vanilla---the possibilities are even more attraction. These kinds of plans are synergies of green growth, a policy direction **Dr Pak Low** explains in his powerpoint here.

Australia may be riding the mineral boom but it, too, was taken aback when Australian-owned Frontier Resources planned to close a 600 metre stretch of PNG’s Kokoda Track to mine for copper and gold. Not exactly a Key Biodiversity Area in the sense of the CI strategy described here, the Kokoda Track is of national historic (and sentimental) importance for Australia (see *Sydney Morning Herald* 2008:12 ). Suddenly the issue became ‘key areas’ for whom?

We read that this January at the Davos World Economic Forum, events dedicated to corporate social responsibility (CSR) and

sustainability were instead dominated by Wall Street worries (Macalister 2008:18). In a Bull market sustainability may be a priority, but in a Bear market it is not. Nevertheless, sometimes the shareholders are green. In yet another case of players improvising the script, the original European shareholders of Bougainville Copper have set up their own website, authored May 2006 by Sven Lorenz, which explains that they “consider ourselves to be literally co-owners of BCL“ and want to work towards re-opening the mine.

In the opinion of ‘The European Shareholders of Bougainville Copper’ Bougainville Copper Ltd shall become a role model for forward-looking, advanced and environmentally harmless mining in the developing world, a project to the benefit of a whole nation. The sheer value of the resources hidden in the soil of Bougainville is high enough to build up a prosperous region with employment opportunities for everybody. We are convinced that the potential revenues by mining on Bougainville will enable the company to comply with all our demands as co-owners of the company and to simultaneously satisfy the humanitarian, ethical and economic interests of all the parties involved in today’s peace and reconstruction process on Bougainville .

Well meaning, right-minded, and unexpected. But they have a curious, faintly colonial motive, it seems, when they say, “It is not only limited to the fact that Bougainville was a German colony back in the 19 th century why in particular the German members of the group of The European Shareholders of Bougainville Copper want to stress their active support for the people of Bougainville.” ([http://www.bougainville-copper.eu/pageID\\_5753635.html](http://www.bougainville-copper.eu/pageID_5753635.html))

## **Greenwashing**

The other way to achieve sustainability on a global plane is to invest in a greener corporate image. For companies like BHP Billiton, this can look a bit like penance candles after confession. BHP has just joined the University of Michigan’s External Advisory Board, for example, for the university’s new Graham Environmental Sustainability Institute (Blumenstyk 2007). An article on this honour quotes anthropologist Stuart Kirsch, who

reminds readers that “the company's practices polluted the Ok Tedi and Fly Rivers and caused thousands of people to leave their homes because the mining-induced flooding made it impossible for them to grow food to feed themselves.” BHP, on the other hand, is said to believe it “considers its pullout from the mine ‘a responsible exit.’” (Ibid) And elsewhere in the article we read, “BHP Billiton, based in Australia, later acknowledged that the mine was ‘not compatible with our environmental values...’” (Ibid). A company spokesman explains, “In places where those regulatory requirements fall below the company's, ‘we will always be guided by our higher standards,’ he says.” (Ibid)

This can be read as more than a public relations gesture. BHP might be said to have wiped its conscience clean. Barely a decade after one of the world’s worst environmental disasters, the company that set up victims compensation packages and walked away (with the mixed blessing of the PNG government), can now thumb its nose at reckless third world states that will abide by their own sterling principles.

Perhaps they would consider sponsoring PNG students through the Graham Environmental Sustainability Institute?.

### **Social and environmental safeguards**

**Dr. Jim Tyler** is the Environment Manager for Porgera Joint Venture and his chapter makes some important points about tailings impact and compensation. As Papua New Guinea's biggest gold mine, Porgera accounts for 72 percent of the country's export earnings. PJV uses riverine tailings disposal, the compensation for which, he says, “is difficult to negotiate, particularly if there is not clear cause and effect.” The mine’s erodible dumps drop about 10 million tones of sediment into the Strickland River every year, but it is hard to quantify its impact. Loss of land, gardens and homes is relatively easy to calculate, but the other losses, like forest loss, loss of fish and even loss of alluvial gold for would-be panners are all extremely difficult to measure for people living along 1000 kms of the river. But once again, the mine is in partnership with the government, which has exempted it from any water testing, and any limits for heavy metal discharge. Indeed, the company has declared

the first 140 kilometres downstream of the mine, home to seven thousand people, to be a 'sacrifice zone.' On the one hand, the chapter seems to pass the buck to PNG, but on the other, it reveals the weak state of compliance and general lack of resistance to corporate pressure PNG has. For a country as mineral rich as Papua New Guinea, it's remarkable how easily it rolls over.

A very different example is described in the chapter provided by Madang's Provincial Administrator, **Joe Dorpar**. In the Ramu Nickel project case, it is the government pointing fingers at their new corporate partner. "Ramu Nickel mine," says Dorpar, "compared to other mines in PNG, still does not meet the mining standard. If we compare ourselves with other mines like Lihir and Kutubu for instance, their performance is of high standard compared to that of Ramu Nickel."

Dorpar notes how MCC has failed to acknowledge the difference between themselves and (the original developer) Highlands Pacific Ltd (HPL) in the series of MOAs (Memorandum of Agreements) and HOAs (Heads of Agreement) that post-date HPL's exit. Again and again they refer to their project investment, research and social license from the era that predates their participation. Some of the documents are detailed here for the public for the first time, and are therefore important references for anyone interested in the matter. It is a peculiarity of this project that the company has not disassociated itself from its predecessor and subsumes so much the consent Highlands Pacific achieved into their own history.

He goes on to describe the problems of compliance thus far with the engineering contractor, China EnFi Nonferrous Engineering Co. Ltd. (ENFI). PNG workers, in stark contrast to their Chinese counterparts, he says, have no safety gear, no food mess, no proper housing, and (lest we forget those newspaper photographs) no toilets. They live like plantation hands of yore. ENFI has also flagrantly violated the labour agreements by using Chinese loader drivers at Basamuk. Given that this is the level of compliance thus far, how can we move forward with MCC, not to mention observe any Precautionary Principle.

Lihir Gold Ltd is an interesting case, and the company's Environment Compliance and Research Superintendent, **Andrew**

**Reid**, contributes a powerpoint to this volume that deserves close reading. This is because Australian owned LGL was recognized in 2006 for having the best sustainability performance among 74 listed Australian gold companies in the annual review of Australian Sustainability Index. Their geothermal power station cuts greenhouse gas emissions at our Lihir Island by six percent of PNG's total CO2 emissions, which in 2006 made LGL the first company in PNG to be granted the right to trade carbon credits under the Clean Development Mechanism of the Kyoto Protocol.

Lihir's submarine tailings disposal process has been in operation now for ten years, which makes their monitoring of benthic organisms, subsurface plumes and tailings dispersion considerably more substantive than either Ramu Nickel or Nautilus Minerals. Once again, undisturbed tailings placement depends upon the steep submarine slopes off Lihir Island.

The European Union's Mining Sector Support Program (MSSP) is also working with LGL (among other PNG mining companies) on a number of scientific and technological upgrades. The MSSP's stated objective, as we learn from Mr. Reid's powerpoint, is to "sustain PNG's economic performance through mineral production and exports, top increase employment opportunities, to alleviate poverty, and to mitigate environmental impacts through mining."

In 2005 LGL suffered a market hiccup after two PNG workers were killed by a landslide at the onshore facilities. This could not have been a surprise, as the initial environmental impact assessment for LGL had pointed out the island was seismically unstable enough to warrant submarine rather than terrestrial tailings disposal. The mine has had an interesting history since the accident, as gold prices have shot up and given shareholders, including landowners who hold an 8% stake, greater and greater returns. Just recently LGL: made a billion dollar bid for Perth-based Equigold, which has a gold mine in the Ivory Coast. This places LGL in the middle of a current African gold rush, and well placed for further West African gold exploration—not to mention takeovers of smaller gold mines. The Australian reported on 22 March that "Lihir chief executive Arthur Hood says there is an 'exploration land grab' under way in the

Ivory Coast” (Trousseau 2008), even though it’s still reeling from a 2002-2003 civil war (and still occupied by UN peacekeepers).

In this way the Lihir landowners, through their small stake, have become part of this new mineral exploration land grab, quite a different sort of ambition than that of the global ecocolonials. To keep their own mine viable, its returns high and the jobs secure, they are now part of the constant search for the next frontier. Of course, if they ride the crest of the mineral boom well enough, they may soon be buying rainforest in Brazil to balance their portfolios and their conscience.

**Mel Trogolo’s** chapter talks about an exciting new prospect for Pacific mining, the extraction of gold, copper, silver and zinc from what are called seafloor massive sulphide deposits (SMS). Nautilus Minerals is exploring for minerals at that sites of new ocean crust, where hydrothermal vents bring extraordinarily rich concentrations of minerals from the earth’s magma to its core. The extraction process is a lot like offshore oil drilling, and in PNG it would happen in the Manus Basin of the Bismark Sea. The environmental costs are reduced by being offshore where higher grades means less material extracted; there is no open cut; less waste, less labour costs or dangers.

Safe disposal of mine waste, including tailings, the single largest environmental challenge facing the mining industry, and if they are minimized in the Nautilus Solwara project, they are by no means eliminated. Sea bed mining involves dredging, drilling and transporting the product to a processing plant on shore. Tailings are produced in the extraction process and risk contaminating the sea when ships travel through choppy waters to the shore.

Nevertheless, one of Nautilus’ strongest recommendations is its economic bottom line. Landowner compensation costs are cut, infrastructure is reduced, and no yawning pits are dug in the ground. The minerals extracted are of unusually high grade. Economically, it couldn’t be more attractive. In managing the triple bottom line, it takes pressure off the social and environmental investments. In theory, more money can be spent on these cost-benefit equations. Because the returns promise to be so high, we



might also expect to lose the ‘juggernaut’ effect and allow technological development to catch up with the geoscientific and oceanographic research. Most importantly, the return on investment may just be high enough to allow companies like Nautilus to refrain from extracting before community and scientific concerns are resolved.

### **It’s never too early**

The missing link in the chain for sustainable development is early stage communication. Industry research, social and environmental assessments are all flawed, because they’re only conducted by humans. All the pertinent information will never reach all the affected people for any proposed development. Moreover, PNG has neither the IT capacity nor the same mandate for democratic distribution of knowledge found in the developed world. If we can establish regular open forums and publications for this information, and make it as widely accessible as possible, we can make better policy planners of the ordinary citizen and more responsive corporate and government leaders. PNG is a small country, and most development policy is designed, shopped and financed by people who have each other on speed dial. This is efficient, effective best practice.

The same collegial relations exist between NGOs, CBOs, landowner associations, local government and Chambers of Commerce. Networks of fractured information move swiftly across the public life of every community, spinning news from the policy desks and donor organizations and Port Moresby sports bars, until the bush telegraph has stirred antagonism and confusion everywhere. Landowners on the ground bark that environmentalists and nay-sayers are all talk and no alternatives. Industry leaders complain that they jump ten hoops in PNG for every one hoop in other, more mining and logging-conducive locations like West Africa, Indonesia, even Australia.

But the real virtue of the PNG situation is its ‘social license’ consecrated in customary land tenure. Because of its mineral wealth, the chance of balancing sustainability’s triple bottom line is actually better here than in most developing nations. But like other

mineral-rich countries, the risk of a Resource Curse is also that much greater. Not only are Citizens Advisory Boards, Ombudmen, and other similar propositions attractive, they are possible here in PNG because of the level of stakeholder interest and participation. If we are on the brink of a new era of seafloor mining, and if this does require greater research and more public awareness and consensus, then let these new mechanisms get started—quickly.

It is the country's mineral wealth that will make the difference in PNG's future. The well planned and restrained exploitation of resources, combined with wise macroeconomic application of their returns, will protect this and future generations from strife and hunger. If we want to preserve the integrity of PNG's unique cultures, and at the same time become more self-reliant, we must see this as a blessing and not an entitlement. Natural resources are not necessarily there for exploitation, if their costs outweigh the benefits. Self-reliance also means having something to live on when the mine closes, when the oil palm plantation is finished, when the agro-forestry project has packed up and gone. This means having fish in the sea, and coral reef to attract visitors. It means schools and aid posts and reforested mountainsides. If we gamble growth on resource exploitation alone, to the neglect of other sectors of the economy, then we are sure to create a PNG of gentry and peasants, both heavily dependent upon global import markets and donor aid.

## References

Ali, Saleem H. and Andrew Singh Grewal 2006. The Ecology and Economy of Indigenous Resistance: Divergent Perspectives on Mining in New Caledonia, *The Contemporary Pacific* Vol 18 No 2: 361-394.

*Annual PNG Industry Overview*, 2008. p 35.

Blumenstyk, Goldie 2007. Mining Company Involved in Environmental Disaster Now Advises Sustainability. *Chronicle of Higher Education* December 7.

[http://www.bougainville-copper.eu/pageID\\_5753635.html](http://www.bougainville-copper.eu/pageID_5753635.html))

Chand, Satish, and Theo Levantis, 2000. Dutch Disease and the Crime Epidemic: An Investigation of the Mineral Boom in Papua New Guinea. *Agricultural and Resource Economics* 44(1): 129-146.

David, Mark. 2008. A New battle for Kokoda *Sydney Morning Herald* 8 February 2008, p 12.

De Soto, Hernando, 2000. *The Mystery of Capital, Why capitalism triumphs in the west and fails everywhere else*. New York: Basic Books.

*Economist* Feb 9<sup>th</sup> 2008

\_\_\_\_\_ March 15 2008

Filer, Colin and Martha MacIntyre 2006. Grass Roots and Deep Holes: Community Responses to Mining in Melanesia. *The Contemporary Pacific* Vol 18 No 2 215-232.

Flannery, Tim 2007. Transcription of ‘Climate Change and Deforestation in PNG,’ a public lecture given at the Holiday Inn, Port Moresby, 20 August.

Gomez, Brian 2008. China’s Ramu Nickel developer aims to lower environmental impact. PNGIndustryNews. Thursday, 13 March. <http://www.pngindustrynews.net/storyview.asp?storyid=193766&iomsource=s0>

*Guardian Weekly* 25 January 2008.

\_\_\_\_\_ 8 February 2008.

\_\_\_\_\_ 28 March 2008

\_\_\_\_\_ 14 March 2008. Climate changes: it’s profit now, p 14.

Henningham, Stephen 1992. Nickel and Politics in New Caledonia. In S. Henningham and R.J. May, eds., *Resources, Development and Politics in the Pacific Islands*. Bathurst Australia: Crawford House Press, pp.64-78.

Horowitz, Leah S. 2004. Toward a Viable Independence? The Koniambo Project and the Political Economy of Mining in New Caledonia, *The Contemporary Pacific* Volume 16, Number 2, Fall 2004, pp. 287-319

Jamon A. Halvaksz II (2008) Whose closure? Appearances, temporality and mineral extraction in Papua New Guinea. *Journal of the Royal Anthropological Institute* 14 (1): 21-38.

Jensen, Klint Karsten (2002). The moral foundation of the precautionary principle. *Journal of Agricultural and Environmental Ethics*, 15(1), 39–55.

Kaiok, Mackhenly, 2008. Ramu mine hitch: Lutheran Church petitions Govt on Ramu Nickel mine. *Post Courier*, Monday January 14 2008, p 1-3.

McMahon, Fred and Cam Vidler, The Fraser Institute. 2008. Building a Sound Mining Policy. [www.Mining.com](http://www.Mining.com) April, p 29.

MiningWatch.com 2004. Environmental Disaster at Misima Mines Continues...Misima Landowners in Port Moresby to Seek Justice. September 22, 2004.

\_\_\_\_\_.2004. Trouble in Paradise: Placer Dome Leaves Legacy of Destruction on Tiny Pacific Island. September 21, 2004

Papua New Guinea National Fisheries Authority, 1999. Recommendations on the Ramu Nickel Project Environmental Plan. Port Moresby, 31 March.

*PNG Resources*, Issue 2 2007: Mambare Operator talking to Chinese, p62.

\_\_\_\_\_Issue 4, 2007.

*Post Courier* 20th October 2005. Transcription of the letter as printed in the, addressed to Ambassador Li Zhenjun, Embassy People's Republic of China and Mr Yang Changheng, President, China Metallurgical Construction Corporation

\_\_\_\_\_ 3-4 November 2007

\_\_\_\_\_ 28 November 2007. Mining gains pose woes.

\_\_\_\_\_ 15 April 2008. Ramu: Tailings are safe.

\_\_\_\_\_ 12 March 2008

*Post Courier* Online 10 April 2008. Mine pollution a scourge.

\_\_\_\_\_ Friday 11<sup>th</sup> April 2008 Environment: It's all around us

Peizer, Jonathan. 2000. Sustainable Development in the Digital Age. Avoiding an Oxymoron. The Soros Foundations. August 15. [http://www.soros.org/initiatives/information/articles\\_publications/articles/sustainable\\_development\\_20000815](http://www.soros.org/initiatives/information/articles_publications/articles/sustainable_development_20000815)

Sandin, Per. 2004. Better Safe than Sorry: Applying Philosophical Methods to the Debate on Risk and the Precautionary Principle. *Theses in Philosophy from the Royal Institute of Technology* 5. 27 + vii pp. Stockholm. ISBN: 91-7283-907-4

Shepard, Richard B. 2005. *Quantifying Environmental Impact Assessments Using Fuzzy Logic* (Springer Series on Environmental Management) New York: Springer Publications

\_\_\_\_\_ 2008. Gaining a Social License to Mine, *Mining.com* April, pp20-23.

Smare, Jaive, 2007. National Development Bank Calls on Resource Companies to get Involved. *PNG Resources* Issue 4 2007 p 120

Somare, M. 2004. Prime Minister's Statement on the Occasion of the Closure of the Misima Mine Delivered on the Prime Minister's behalf by Hon. Sam Akoitai, MP 26 May, from

<http://www.pm.gov.pg/pmsoffice/Pmsoffice.nsf/pages/BCBAD17F1A9406A34A256EA800207CAB?OpenDocument>

Steiner, Richard, 2008. Personal communication with Nautilus Minerals CEO David Heydon, March 5.

*Sydney Morning Herald* 8 February 2008, p 12..

Trounson, Andrew, 2008. Africa gold rush propels merger. March 22  
*The Australian* online.  
[www.theaustralian.news.com.au/story/0,25197,23413078-643,00.html](http://www.theaustralian.news.com.au/story/0,25197,23413078-643,00.html)

*UK Financial Times* June 16<sup>th</sup> 2004

Victor, Clement Kunandi, 2007. The possible impacts of the submarine tailings disposal of tailings from the Ramu nickel mine. *Post Courier* 9th February.

Vidal, John. 2008. The great green land grab. *Guardian Weekly* 22. February, p 25.

Waki, Natsuko. 2008. Sovereign funds seek wealth outside developed world *Guardian Weekly* 9 April.

West, Paige and Martha MacIntrye, eds. 2006. *The Contemporary Pacific* Vol 18 No 2.

it has been found that statistically, civil wars are more likely to occur in producing countries. Ross, M. 2001 "Does Oil Hinder Democracy?" *World Politics* 53 (3): 326-61.