

## La'o Hamutuk

[Bulletin](#) | [Surat Popular](#) | [Topic index](#) | [Reports & Announcements](#) | [Updates](#)  
[Reference](#) | [Presentations](#) | [Mission Statement](#) | [LH Blog](#) | [Search](#) | [Home](#)

# Environmental assessment for Betano refinery

10 May 2016

Timor-Leste's state-owned oil company [TimorGAP](#) will own and manage the [Tasi Mane Project](#) (TMP), a corridor of petroleum infrastructure along the southwest coast of Timor-Leste, including the [Suai Supply Base](#), [LNG plant complex in Beacu](#), highway from Suai to Beacu, ports, onshore and offshore oil and gas pipelines, airports and new towns. This page is about the **refinery and petrochemical complex planned for Betano**, and focuses on the Environmental Impact Assessment and Environment Management Plan for that component.

## Contents

- [2012: Strategic EIA](#)
- [2015: Tender for real EIA](#)
- [2016: TEAM Group prepares EIA and EMP; La'o Hamutuk raises concerns](#)

## 2012: EIA only 'strategic' due to lack of information

In 2011, Timor-Leste awarded a \$1.1 million [contract](#) to the Australian engineering company [WorleyParsons](#) to prepare Environmental Impacts Assessments (EIA) and Environment Management Plans (EMP) for the first three components of the Tasi Mane projects ([Information about the tender process](#)). WorleyParsons prepared the [EIA and EMP for the Suai Supply Base](#) and a "Strategic EIA" for Betano and Beacu, which TimorGAP submitted to the State Secretariat for Environment (SEMA). A Strategic EIA has general information about environmental implications, but it is not sufficient for an environmental license, which requires a detailed, project-specific EIA and EMP. The 'final' version ([Executive Summary](#)) of the SEIA, issued in June 2012, includes

1. [Part A](#) (18 MB, including executive summary, introduction, regulatory and environmental context, project descriptions, Betano EIA and management)
2. [Part B](#) (14 MB, including Beacu EIA and management, environmental management framework, conclusions and recommendations, references)
3. [Part C](#) (6 MB, including 12 Appendices)
4. [Attachments](#) (11 MB, including Terrestrial Flora and Fauna Technical Report, Marine Environment Technical Report)

After the SEIA was prepared, [TimorGAP contracted for additional design work](#). A design change in 2014 meant that the refinery no longer has its own port, but will receive its feedstock and export its products through a 78-kilometer pipeline to storage tanks and an additional jetty on the Suai Supply Base property.

The planned layout for the supply base marine facilities was adjusted during 2013 to integrate marine facilities previously planned for the Betano refinery cluster into Suai. In 2014, TimorGAP and Eastlog finalized the revised master plan, adding a liquid jetty and dredging. On 24 July 2014, the [Council of](#)

[Ministers approved Resolution 19/2014](#), revising the Suai Supply Base plan to use its port to receive and pipe condensate feedstock 78 kilometers to the Betano refinery. Refined products will be piped back from Betano to Suai for export.

## 2015: Tender for real EIA

On 1 July 2014, the [National Environment Directorate \(DNMA\) notified](#) TimorGAP that the Betano project is "Category A", and DNMA issued a [similar notice for the Suai-Betano pipeline](#) on 20 March 2015.

On 6 February 2015, [DNMA approved the Terms of Reference \(TOR\) for the EIAs for the Refinery/Nova Betano/Water Pipe](#), and on 1 June [DNMA approved the Oil Pipeline TOR](#).

In August 2015, [TimorGAP invited bids](#) from "experienced and capable consultants" to prepare the Environmental Impact Assessment Study for the Betano refinery. The documents distributed to potential bidders included:

- [Overall Content and Instructions to Bidders](#)
- [Draft service agreement](#)
- Scopes of Work for the format of the [EIS \(EIA\)](#) and the [EMP](#) and a [flowchart of the EIA process](#)
- Checklists for the [EIS](#) and [EMP](#)
- Terms of reference for the [Refinery \(including Nova Betano village\)](#) and the [Pipeline](#)

On 3 August, [TimorGAP responded to some questions](#) asked by potential bidders. Two days later, TimorGAP issued [Addendum 1](#) to the documents, describing how bids would be evaluated. They also convened a ["pre-bid meeting"](#) for nine prospective bidders, giving presentations on the [Technical](#) and [Commercial](#) aspects of the project, according to the minutes of the meeting. A [second Addendum](#) was issued on 12 August, clarifying the schedule of the tender process, and TimorGAP answered a [second set of questions](#) on 14 August.

Details of the procurement process, including bid specifics, number of bidders, evaluation process, price and dates have not been released. However, the contract was awarded to TEAM Consulting Engineering and Management Co., Ltd. (TEAM Group) from Bangkok, Thailand.

## 2016: TEAM Group prepares EIA and EMP; La'o Hamutuk raises concerns

On 31 March 2016, TimorGAP invited La'o Hamutuk and others to a 'public consultation' on the EIA process, with [presentations by TimorGAP](#) and [TEAM Group](#). La'o Hamutuk was the only civil society group present, and we asked the only questions related to environmental issues. We were appalled by the lack of concrete information and the cavalier way potentially disastrous problems were handled, and accepted TimorGAP's invitation to submit additional comments. On 10 May, we wrote them the following Open Letter [links and some graphics added], which you can also download as a [PDF file](#):

La'o Hamutuk, Dili, 10 May 2016

To: President Francisco da Costa Monteiro, TimorGAP, Timor Plaza, Dili, RDTL

cc: Songsak Bhaddee and Budsaba Israngura Na Ayudhya, TEAM Group, Thailand  
João Carlos Soares, Direcção Geral do Meio-Ambiente, RDTL  
Alfredo Pires, Minister of Petroleum and Mineral Resources, RDTL  
Constâncio Pinto, Minister of Commerce, Industry and Environment, RDTL  
media, public

## re: The environmental assessment process for the Betano Refinery and Suai-Betano pipelines

Dear President Francisco da Costa Monteiro,

Thank you for inviting La'o Hamutuk to attend the public consultation on 31 March regarding the Environmental Impact Assessment and Management Plan for Betano refinery and associated facilities, and for responding to some of our questions. You encouraged us to send additional comments in writing, which we are doing through this open letter. We hope that it will help you and others to fully consider all costs, benefits and risks of the proposed refinery, including economic, environmental, social, health and emergency response. As you know, [Decree-Law 5/2011 on Environmental Licensing](#) requires that the EIA and EMP be finalized and approved before an environmental license is issued, and construction cannot be started without such a license.

Environmental and safety concerns are of the highest importance when planning and designing a project which entails dangerous materials and procedures, such as this one. Last month's [explosion at the PEMEX petrochemical plant](#)



in Mexico (photo at right), which killed at least 32 people, is only the latest reminder of the dangers intrinsic to petrochemical and refining activities.

Based on the limited information on this project that we have seen, we have some questions and suggestions, as developed below. We will undoubtedly have more after we receive more specific technical details.

### Contents

- [Please recognize and plan seriously for the actual risks of the refinery project.](#)
- [Consultations should be on topic, sincere, and preceded by concrete information.](#)
- [The Terms of Reference omit essential requirements.](#)
- [The Betano facilities require other components of the Tasi Mane Project.](#)
- [The Suai components need impact assessment, management planning and a license revision.](#)
- [Will the refinery recover its costs in today's market environment?](#)
- [Environmental impacts during normal operation should be defined.](#)
- [The EIA and EMP must discuss abnormal events and how they will be handled.](#)
- [Conclusion](#)

**Please recognize and plan seriously for the actual risks of the refinery project.**

We congratulate everyone at TimorGAP for the recent ISO certifications of your Quality, Health, Safety and Environmental management systems. As you know, it is easier to meet these standards while sitting in an office in Timor Plaza or attending meetings, than during actual oil and gas operations. It will take more than the 'safety warning' which opens TimorGAP's public events to maintain ISO certification – and to protect workers, the environment and the public – when you are transporting, storing and processing huge quantities of toxic or explosive materials. The number of locations which must be managed will be much greater, and the risks will be exponentially higher.



Therefore, we are disappointed that the EIA/EMP/licensing processes for the Betano components of the Tasi Mane project are not being taken seriously. From what we saw at the 'consultation' on 31 March, little thought has been given to the serious dangers inherent in a project as large and complex as this which involves large quantities of numerous highly toxic and explosive materials.

In 2012, Timor-Leste paid more than a million dollars to the Australian Company [WorleyParsons to prepare Environmental Impact Assessments and Environment Management Plans](#) for the Suai, Betano and Beaçu components of the Tasi Mane project. However, WorleyParsons could only prepare a 'Strategic' EIA for Betano (basically, a baseline study and general descriptions of types of impacts), which they wrote "should be regarded as preliminary in nature as it is expected that, as detailed design proceeds, further studies and consultation with the affected communities will be required and some of the conclusions reported herein, will also change." As they did not have adequate "information relating to the key infrastructure proposed, scale and production technology" they could not assess "the actual scale and location of these impacts and, for this reason, a quantitative assessment could not be undertaken."

Although additional design and engineering work has been carried out during the last four years, the material we have been allowed to see relating to the current EIA process contains hardly anything more than WorleyParsons' 2012 SEIA. It appears that the principal difference is that TEAM Group is less concerned about their reputation and their duty to protect the environment, and is therefore willing to provide TimorGAP with a document entitled "Environmental Impact Assessment" without concrete information about the environmental impacts of this particular project.

[TEAM Group's presentation](#) was little more than a recap of baseline information already collected by WorleyParsons and others. It considered the refinery and 310 km of onshore oil pipes as having the same degree of impacts as the Nova Betano village or the 10 km water pipe. Runoff water from heavy rains got more attention than the poisonous, flammable petrochemicals and petroleum which will be stored and processed at the refinery.

### **Consultations should be on topic, sincere, and preceded by concrete information.**

Unfortunately, the discussion at the 31 March meeting reflected the lack of priority given to the environment – even though that was the only topic on the agenda. La'o Hamutuk was the only civil society group present, and we asked the only questions about environmental issues. Representatives from governmental entities asked about employment, economics and road closings during construction, which are important but mostly irrelevant to the EIA/EMP/Licensing process. Given the lack of information provided in advance or at the consultation, very limited discussion of environmental concerns and poor attendance, the 31 March meeting should not be considered a proper public consultation as required by the Environmental Licensing Law.



Consultation is not mere socialization – it should be free, prior, informed consent from stakeholders and community members who will be displaced or will have their land, lives and livelihoods affected. They need to be listened to, and their concerns addressed, not just “heard.”

Furthermore, TEAM Group appears to have talked with only a few (male) community leaders during their ‘consultations,’ and the questions and comments reported indicate that the community representatives were not adequately informed about the possible impacts of the project during operation, from spillage or accidents, or after decommissioning. Surely, the operation of a refinery entails more serious risks than construction noise, traffic and dust. We are not surprised that local people want jobs and ‘development’ – although no information appears to have been shared with them about the numbers of jobs or the skills required to get them, or what other benefits can justify the sacrifices local communities are being told to make.



In addition to the list copied from WorleyParsons’ 2012 SEIA, consultations should also include fisherpeople, Luta Ba Futuru, Haburas, traditional leaders (*lia na’in sira*), and others prominent in the community, such as teachers, clergy and health workers. There should also be gender and age diversity among those consulted, and disabled people’s needs must be considered. The formal ‘community leaders’ -- local politicians paid by the national government – have an inherent conflict of interest in representing what people in their communities need and want. If this EIA is to include the Suai components of the refinery project, people in Suai and Covalima should also be consulted.

La’o Hamutuk has repeatedly asked TimorGAP for drafts of the Betano refinery Environmental Impact Assessments (EIAs) and Environment Management Plans (EMP), so that we could comment on more substantive issues and omissions than the PowerPoints shown by [TimorGAP](#) and [TEAM Group](#) on 31 March allow. We are uncertain if these drafts exist yet – but it is essential that they be made available for public consultation, with adequate time for analysis. Finger-pointing between TimorGAP and Direção Nacional do Controlo Poluição e Impacto Ambiental (DNCPIA, formerly DNMA) is not a good excuse for failing to facilitate and invite well-informed, diverse perspectives which will enhance community and worker safety, as well better protecting our natural and human environments. La’o Hamutuk and other stakeholders should also have access to other key documents related to the Betano component of the Tasi Mane Project, including:

- 2010 MOU between TimorGAP/SERN and PTT International Company Limited, Thailand
- 2011 Hydrocarbon Master Plan from SERN
- 2011 pre-feasibility study by KBC Advanced Technology Pte. Ltd.
- 2013 Joint Trading Agreement and Joint Cooperation Agreement between TimorGAP and PTT
- Front-End Engineering Design and cost estimation
- Land Survey Study
- Land Development and Cost Estimate Study
- Market Survey Study

Given the lack of information, we apologize if we are unaware of certain facts, context or analysis.

Meaningful consultation requires much more transparency, especially as the people of Timor-Leste have paid for all the expenses related to this project so far, including this EIA/EMP process. Unfortunately, TimorGAP's procurement and contracting is not transparent, so we do not know how much money has been spent.

For other large projects, Timor-Leste has recently learned that bypassing environmental assessment and licensing, including public consultation, can lead to major problems. This project should not repeat them. [For example, Oecusse airport construction costs increased dramatically because the ground water was not properly assessed in advance, while the Ministry of Finance office tower in Kampung Alor remains unused, partly because of concerns about resilience to earth tremors given the softness of the soil under its foundation.]

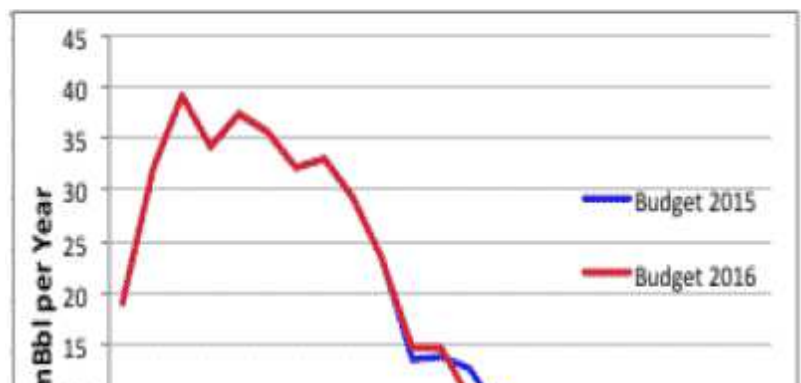
### **The Terms of Reference omit essential requirements.**

The [Terms of Reference](#) (TOR) for these environmental studies are not complete, logical, accurate or clear. We are disappointed that such gap-filled documents were approved by both TimorGAP and DNCPIA. We don't know if their sloppiness results from language problems, lack of technical expertise, inadequate information, limited human resources or insufficient political will, but the result is unfortunate. We hope the project itself will be more thoughtfully and comprehensively managed and overseen, and that DNCPIA, TimorGAP, MPRM, their Thai corporate partners, and everyone else involved will be more professional in the future. The potential consequences of continuing along this path are disastrous.

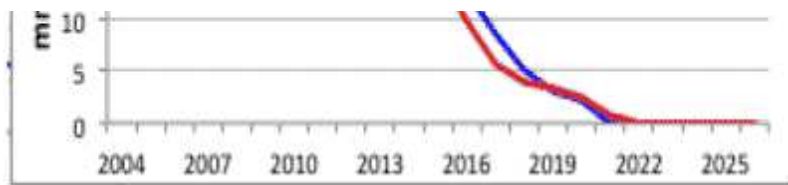
The deficiencies we noticed include:

- TEAM Group was told to prepare their report in only three months, a time period for which at least [one bidder stated](#) "is considered not possible to prepare a good standard report," and [another said](#) "the impact assessment, and EMP cannot be prepared properly" in this time frame.
- False or irrelevant copy-pasted paragraphs relating to certain elements of the project (e.g. that hundreds of jobs are involved in operating the pipeline).
- Confusing allocation of responsibility (e.g. the construction company is responsible to train workers for refinery operation and maintenance).
- Unclear information about who will operate and maintain the refinery, and who will be responsible for dealing with its impacts.
- Negligible information about the toxic and/or flammable substances and quantities involved.
- Virtually no mention of emergency response (fire, medical, clean-up) capabilities which currently exist or will be needed to respond to events at the refinery.
- Statements that condensate to supply the refinery will come from Bayu-Undan and [Kitan](#). Kitan ceased production last year, while liquids production from Bayu-Undan is already lower than 30,000 barrels/day and will be less than half that after next year, dropping to zero by 2021, probably before the refinery is operational. [This graph is from page 68 of [Book 1 of the 2016 State Budget](#).]

**Figure 2. BU Liquids, Budget 2016 vs. Budget 2015**



- Lack of clarity that all components of the project must be decommissioned at the end of their operating life.
- An assumption that the four on-shore pipelines, which will contain more than 13 million liters of highly flammable, toxic liquids, will not require any attention, disposal, clean-up or waste management after the refinery stops operation.
- No mention of the post-decommissioning phase, when the owner and operator are no longer involved but dangerous materials from the refinery persist. Decommissioning will not be 100% able to restore the environment to its pre-project condition. Therefore, the impacts of the residues and remnants should be analyzed, in light of the absence of institutions with responsibility to monitor and respond to their enduring effects. [The [U.S. “superfund” experience](#), where the government had to spend far more than the entire value of Timor-Leste’s Petroleum Fund to clean up abandoned hazardous waste and pollutant sites, should not be repeated.]
- No clarity that the Environment Management Plans must be concrete, detailed, specific and legally binding. They must include emergency response as well as normal operation and monitoring. They will need to be revised as the project evolves. If they are not implemented and followed, the project owner needs to be accountable – to justify noncompliance or be sanctioned.
- It appears that TimorGAP has learned some lessons from the mismanagement of land issues around the Suai Supply Base. TOR section 2(e) on “land ownership” says:



*"It is reported that there is no proper land registry, no recording or verification of land transactions or no framework to determine competing claims to land. Land ownership and transition is largely based around the family unit. It is therefore recommended that thorough checks are made during the planning stage to ensure that potential claims are settled amicably, through use of social surveys and liaison with Government officials. The official Government line is that all land belongs to the Government although there are reports of disputes relating to such issues."*

Although this is largely correct, the Betano project will be implemented after Timor-Leste has enacted laws on land titling, expropriation and compensation which will hopefully respect traditional and community rights. The EIA and EMP should be written with those in mind, working from the latest drafts available of these laws, and updated once the laws are finalized.

- Confusion about the purpose and size of Nova Betano village. Is it for displaced community residents or for plant workers? At the 31 March meeting, it was described as housing for 1,140 people, but the SEIA says 14,500. Which is correct?

In 2008, La'o Hamutuk published the book [Sunrise LNG in Timor-Leste: Dreams, Realities and Challenges](#). [Chapter six](#) discusses environmental concerns, most of which are relevant to the Betano refinery and could help fill out the scope of this EIA process.

### **The Betano facilities require other components of the Tasi Mane Project.**

Since it was first conceived more than seven years ago, all components of the Tasi Mane Project have fallen behind their original schedules, and some may never be implemented. Many people have raised serious concerns about their viability or cost/benefit tradeoff, and the outcome of the 2017 election could lead to further delays or even cancellation. Nevertheless, the Betano refinery depends on other components, and its EIA and EMP should therefore include contingency plans or alternatives – if possible – if other elements are not ready when they are needed.



For example, the four 78-kilometer-long onshore oil pipelines will be laid alongside the [highway between Suai and Betano](#). However, only Section 1 (the westernmost 30 km of the highway) has been tendered or is being built, which is less than half of the length of the pipelines. The government is seeking loans to finance the highway project, but no lenders have been identified. Although the government or TimorGAP has conducted environmental and social studies for the highway, these have not been made public. They should be incorporated into the refinery EIA.



If Section 2 of the highway has not been finished, how will the pipeline be laid? How will materials be brought there, land be acquired, and the site be protected?

Furthermore, construction on Section 1 of the highway has begun without the legally required environmental license, and DNCPIA may halt construction. How would this affect the project?

As we discussed above, the [Suai Supply Base](#) (SSB) will be used for shipping in and storing the condensate (feedstock) for the refinery, as well as for storing and shipping out most of its liquid products. The SSB project has been stalled for half a year because of irregularities in the tendering process, with no definitive idea of when and whether it will go ahead.

The discussion of 'alternatives' in each TOR does not consider the uneconomic, dangerous and unconventional decision to locate the port for the refinery 78 km away from the refinery itself. Is this design, which was endorsed by [Government Resolution 19/2014 of 24 July](#), considered to be the only way to make the refinery economically viable? Why are the alternatives of building the refinery next to the port in Suai or building the Supply Base in Betano next to the refinery not mentioned? The documents also omit the alternative of using renewable energy which would reduce Timor-Leste's need for refinery products, save money, and avoid many negative environmental impacts.

Construction of the refinery will require significant amounts of heavy equipment, components and materials. If the Suai Port and Highway are not yet functional, how will these materials be brought to Betano? None of the documents we have seen mention a temporary port for construction, or the environment and safety impacts of transporting such items.

Finally, although the initial phase of the Betano refinery will process 30,000 barrels per day of condensate, TimorGAP and others plan to expand it to 60,000 and 100,000 bpd, and to build additional petrochemical industry facilities on the refinery site. The pipelines supports peak flows of less than 60,000 bpd, so additional pipes will have to be laid for increased volume and additional products from the Betano site to Suai port. It is unclear if the current EIA and EMP are only for the initial phase, and what additional assessment, planning, licenses and management will be required for subsequent phases. A responsible assessment and consultation process would contain information and discussion of these future plans – even though they cannot be licensed until they become more specific.

**The Suai components need impact assessment, management planning and a license revision.**

The refinery's input pathway has been changed since WorleyParsons did its studies and the National



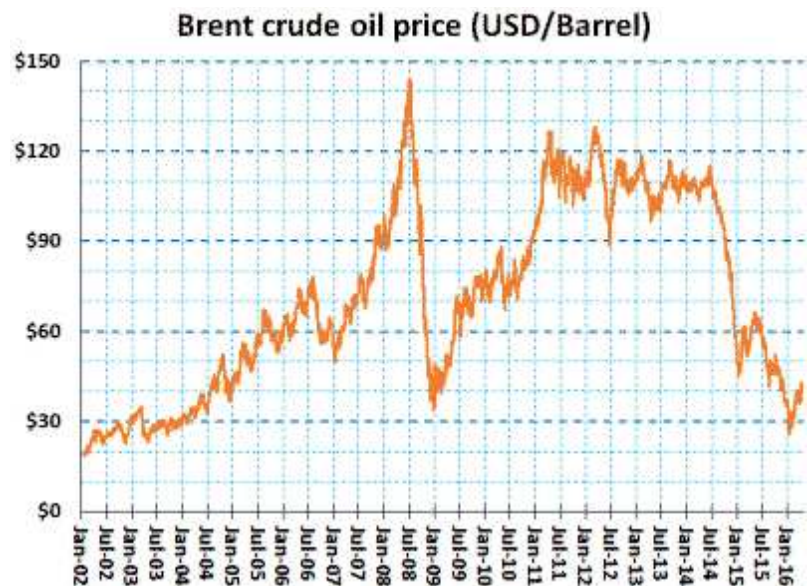
Environment Directorate was persuaded to issue an environmental license for the Suai Supply Base (SSB). The Betano project now includes four 78-km onshore oil pipelines (which are discussed in the current study), and an additional jetty, storage, a tank farm, and shipping traffic at the SSB. Although these are described in the TOR for the Betano EIA, TimorGAP's answer to [Question 1 in Q&A 2](#) (14 August 2015) was that these components are "already covered in the SSB license," so TEAM Group did not analyze them.

The Suai Supply Base EIA was prepared and its Environmental License was granted before these design changes were made. Therefore, according to article 25 of Decree-Law 5/2011 on Environmental Licensing, the EIA and EMP must be updated, after which a revised license may be issued. During the 31 March consultation you said that you believed this had been done, but the Environment Directorate told La'o Hamutuk that it has not been.

### **Will the refinery recover its costs in today's market environment?**

It will take several years to design and build the refinery. Bayu-Undan production will be finished by then, and TimorGAP will have to import condensate feedstock. Why is this significantly different from importing refined products? Depending on a single refinery for fuel and other petroleum products – rather than being able to purchase them from any of the many refineries in the region – will not enhance Timor-Leste's energy security.

During 2011, when Timor-Leste prepared its Hydrocarbon Master Plan and the Pre-Feasibility Study for the Betano Refinery, the average price of a barrel of Brent Crude was \$117 (2014 US dollars). During the first four months of 2016 it averaged \$36, less than a third of that amount. This drastic drop also affects the sale price of refinery products – the same percentage refining margin will yield far fewer dollars. ConocoPhillips, a worldwide company involved in refining and sales as well as exploration and production, just posted a [loss of \\$1.5 billion](#) during the first quarter of 2016. Given these changes in the global oil economy, the viability of this project needs to be seriously reexamined.



The Betano refinery has an inefficient design, small size, depends on imported feedstock, and will be operated and marketed by people with no track record and limited experience. Most of its products will be exported, competing against hundreds of larger, well-established refineries in this region. [According to [Wikipedia](#), there are four operating refineries in Australia, eight in Indonesia (with a total capacity 35 times larger than Phase 1 of Betano), 29 in Japan, six in Malaysia, three in Singapore (with capacity 46 times Betano), five in South Korea and seven in Thailand.]

In recent years, the government of Timor-Leste has paid [excessively high prices](#) for imported fuel, although this is becoming better controlled. In addition, many consumers do not have enough options or knowledge about current prices to avoid paying more than they should in a well-informed "free" market. We have heard some say that the Betano refinery will not have be competitive with other refineries, especially for captive public and private sector buyers in Timor-Leste. We hope that

TimorGAP does not expect the State or citizens to subsidize its operations by paying higher prices than they would have paid for imported fuel.

An economic analysis of the refinery project needs to look at how it fits into Timor-Leste's economy and society, and at its social and financial benefits. It should consider taxes the refinery will pay, taxes which would have been collected on imported refined products, and the numbers of jobs, subcontracts and spinoff business, as well as the skills, experience and infrastructure required to benefit from them. How many of these will go to Timorese people, with what required experience, and how many to foreigners? How does this evolve as the project moves from the design phase to construction, operation, maintenance and decommissioning? As it grows from 30,000 bpd to 100,000 bpd?

In the public consultations reported by TEAM Group, community leaders expressed great interest in these questions, as did representatives from SEPFOPE, HCDF and the Ministry of Finance who participated in the 31 March 'consultation.' However, very few specific, well-founded numbers have been publicly circulated or explained. Without this, how can anyone know whether the project is beneficial to their community, or to this nation?

### **Environmental impacts during normal operation should be defined.**

In order to assess the environmental impacts of this project and to manage them appropriately, the EIA and EMP must identify, quantify and describe measures to minimize, mitigate, monitor and remediate normal and abnormal occurrences that can occur with each toxic or flammable gaseous, liquid or solid material transported to or from, stored, handled or emitted at the Betano or Suai sites, including in normal operation, spills, leaks, and catastrophic events like tank ruptures, fires and explosions.

The TOR and presentations include almost no information on these, other than dust and noise during construction. There are much more serious things to assess, including:

- What materials will be present on site, in what quantities and under what temperatures and pressures? Identify their toxicity, volatility and flammability. This should include not only the first phase but a projection for future expansion and petrochemical facilities.
- How much flaring is intended? When? How much noise, air and light pollution will it release? What alternatives are there?
- What gaseous emissions, including greenhouse and other gas emissions – quantities and substances, in addition to? We are not experts, but there is more information available now than WorleyParsons had in 2012 when they mentioned only "BTEX, VOCs and NOx."
- What solids, liquids and gases will be produced that are not piped back to Suai for shipment?
- How will liquid and solid wastes be disposed of, given that the Betano site has no port or waste pipeline? If they will be trucked out, where will they go? We wish that the TOR's optimism – that everything can be handled through "reduce/reuse/recycle" – was justified, but there will be some remaining waste which must deal with.
- Impacts on ground water. Flows, distribution and clean-up plans.



- Marine pollution, including analysis of tides, currents, and sea life migratory patterns for the Betano and Suai sites and anywhere else that leaks could occur. If (treated or untreated) waste water from Nova Betano and the refinery itself are to be discharged into the sea, what pollution levels are allowed?
- Health impacts should include analysis of possible illnesses (not only cancer) which can be caused by materials used or excreted from the refinery, including pollution and accidents. [Minamata](#) and [Bhopal](#) taught lessons humanity must never forget.
- Spills can arise not only from “mishandling” but also from design faults, process mistakes, and mechanical failure. They can be into sea and rivers as well as on land. They can occur from ships, tanks, pipes, waste storage or anywhere in between.
- Monitoring is too infrequent and sparse for timely identification and prevention of problems with the pipeline, water quality, marine pollution and other factors. It needs to be more frequent, at more locations, and resilient enough to function during outages of electricity and/or telecommunication systems. A catastrophic event could disable those systems at the same time it damages refinery infrastructure.
- What will be done when monitoring reveals a leak, unexpected emission, drop in pipeline pressure or other problem? Who will be responsible?
- Effects of rising sea levels during the 50-year life of the project, and the longer period that its residue and ruins will persist for. This should include the risks of flooding of facilities’ and waste ponds, of salt water intrusion (including on the pipeline) and changes in marine and other ecosystems. Rising air and sea temperatures and extreme weather should also be considered, including water shortages and violent storms. The petroleum industry not only helps cause climate change, but it will be impacted by the consequences.
- Resilience in light of possible tsunamis and earthquakes. What are the facilities designed to withstand, and what will be the emergency response if, for example, the roads to the plant are disrupted and there are major leakages or fires?
- How much electricity will the refinery require? If it will come from the Betano power plant (unclear in the TOR), what will be done when there is an outage, and what consequences and risks will occur?
- The long pipelines will probably require pumping stations along the way, which will add to environmental and [safety risks](#) but are not mentioned in the documents we have seen. Will the pipes be heated? How will they be cleaned? What will be done to protect them from vandalism and theft, as happens often in Nigeria, including at [Abule Egba](#) and [Ijegun](#)?
- Effects of vehicle accidents on the onshore pipeline which parallels the highway, including where the pipes are above-ground at and near river crossings. Plans should consider vehicle fires and vehicles crashing into a pressurized pipeline.



**The EIA and EMP must discuss abnormal events and how they will be handled.**



You told the 31 March meeting that “We need to look at the positive as well as the negative.” However, the only reason to prepare an Environmental Impact Assessment and Environment Management Plan is to look honestly at the negative, the risks, in order to evaluate, prevent and minimize them. We should prepare for the worst, while hoping for the best. Denial or concealment violates the public trust.

Both TimorGAP’s Terms of Reference and TEAM Group’s presentations almost entirely ignore the possibility of leaks, spills, accidents, fires and explosions. Although we share their wish that everything will go as planned, this does not happen anywhere in the world.

Refineries work with toxic, flammable and explosive materials. They move through transport and piping systems, under sometimes extreme pressures and temperatures, controlled by computers, mechanical parts and human beings. Unexpected occurrences will inevitably occur – and a key purpose of the EIA and EMP process is to anticipate them, estimate the potential consequences, and explain what will be done, and by whom, to reduce the likelihood of abnormal events and to control the damage when they occur.



The documents call for good practices, monitoring and compensation – but these are not enough. Timor-Leste has little capacity to provide effective emergency response, contain hazardous material, or supply prompt and effective medical care in Betano and across the country. Therefore, the planning, preparation, design, implementation and operation of the refinery and associated components must spell out the potential risks and how they will be handled. Although refinery technology is new for Timor-Leste, it is well-developed around the world, and we should learn from others’ experiences and avoid their mistakes. [Thousands of reports describe refinery accidents all over the world. For example, Contra Costa County, California, USA has the same population as Timor-Leste, and their [local government](#) lists more than fifty refinery accidents in that county alone during a recent 20-year period, many of which killed people.]

How will leaks and spills be contained and cleaned up, to minimize poisoning of people, livestock, air, ground water, ocean and farmland? Where and from whom will victims of fires and explosions receive first aid and longer-term care? How will communities be alerted to imminent risks? How will workers and other people in danger be evacuated, and to where? What will be done with contaminated soil and water?

## Conclusion

Several companies from Thailand, including PTT and TEAM Group, have key roles in this project. PTT’s massive 2009 [oil spill at the Montara field](#) in the Timor Sea, which damaged fisheries 250 km away in West Timor (detailed [report](#)), is well-known to many here. However, PTT and other Thai companies have a long record of environmental damage and accidents from pipelines and refineries, including. Are they the most appropriate partners to protect the environment and interests of Timor-Leste’s people? On 31 March you pointed out that every company has good and bad parts of its track record, but some are clearly worse than others. [Here are a few links to English-language reports on recent accidents and pollution in Thailand, many of which involve PTT: [Thailand’s Air: Poison Cocktail: Exposing Unsustainable Industries and the Case for Community Right To Know and Prevention, 2015 oil spill](#),



[2014 refinery fire \(second article\)](#), [2013 oil spill \(second, third and fourth articles\)](#), [2012 refinery explosion](#), [1999 refinery explosion \(video\)](#)]

Finally, the TOR section on “Promoting environment awareness among employee and community” reads:

*“Betano refinery management will arrange regular environment activities for employee and community to raise the environment awareness. Example of environment activities are: trash collecting by community volunteers and refinery staff, contest in environment article writing by school students, village drinking sampling that witness by community, tree growing, etc.”*

If that paragraph represents the level of environmental awareness of the proponents, managers and operators of the Betano refinery, Timor-Leste is in big trouble.

As always, La’o Hamutuk would be glad to answer any questions about this letter, provide additional information to the best of our ability, and engage in further consultations if adequate information is provided in advance.

Thank you for your attention and concern.

Sincerely,

Charles Scheiner, Juvinal Dias, Niall Almond, Adilson da Costa Junior, Celestino Gusmão and Marta da Silva

La’o Hamutuk Researchers on Economy and Natural Resources

**The Timor-Leste Institute for Development Monitoring and Analysis (La’o Hamutuk)**  
**Institutu Timor-Leste ba Analiza no Monitor ba Dezenvolvimentu**

Rua dos Martires da Patria, Bebora, Dili, Timor-Leste

P.O. Box 340, Dili, Timor-Leste

Tel: +670-3321040 or +670-77234330

email: [info@laohamutuk.org](mailto:info@laohamutuk.org) Web: <http://www.laohamutuk.org> Blog: [laohamutuk.blogspot.com](http://laohamutuk.blogspot.com)