

POTÊNCIA PETRÓLEO

NO

**DESENVOLVIMENTO KOSTA SUL
(PROJETU TASI MANE)**

**Hanesan parte ida husi implementasaun Planu
Estratéjiku Desenvolvementu**

DCC, 8 de Dezembru 2018

Konteudu apresentasaun:

1. **Potensial Setor Petróleo**
2. **Dezenvolvimentu Projetu Tasi Mane**
3. **Estudu Viabilidade**
4. **Progresu Balun**

1. POTENSIAL SETOR PETROLEU

POTENSIALS PETROLIFERA NO KAMPU PETROLIFERA NE'EBÉ IHA FAZE EXPLORASAUN NO HEIN DEZENVOLVIMENTU:

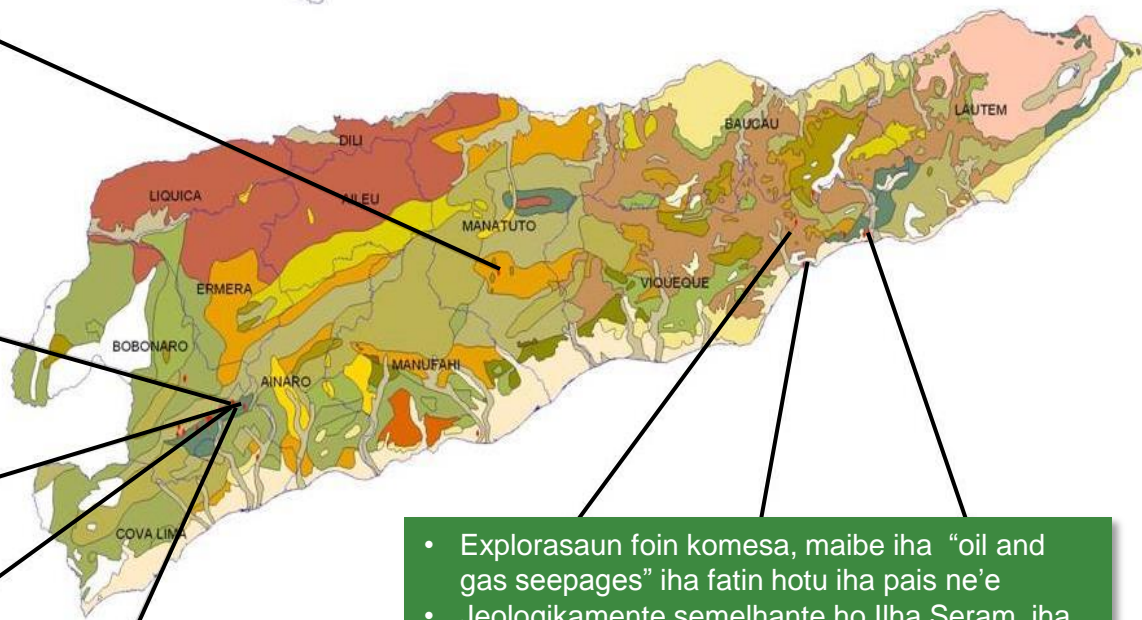
- Greater Sunrise gasfield (6.7 Tcf Reserva Rekuperavel no 280 milhoens de barris 'condensate')
- PSC ida iha explorasaun – Block 11-106 (Eni, INPEX and TIMOR GAP) ne'ebé iha ona deskobertas, hanesan Jahal, Kuda Tasi, Squilla no Krill
- Liu 65% área, ne'ebé mamuk, ho prospetus no deskobertas, ezemplu Kelp Deep 13 TCF, Chuditch 0.75 Tcf, sst, iha ex-JPDA
- PSC iha área Esklusiva (Eni, Galp and KOGAS)
- Iha área Exklusiva, ~ 85% sei mamuk, katak seidauk iha lisensa de explorasaun

POTENSIAIS- RAIMARAN (ONSHORE)

TIMOR-LESTE NATURAL GAS SEEPS PROSPECT MAP

LEGEND

	TL Gas Seeps
	District boundary
TL Geological Formation	
	Aileu Formation
	Ainaro Formation
	Aitutu Formation
	Aliambata Formation
	Alluvial
	Barique Formation
	Baucau Limestone
	Bobonaro Complex
	Bobonaro Formation
	Borolalo Formation
	Cablaci Limestone
	Cribas Formation
	Darto'u Limestone
	Dilor Formation
	Lariguti Formation
	Lolotoi Formation
	Maubisse Formation
	Suai Formation
	Surobeco Formation
	Viqueque Formation
	Waibua Formation
	Wailuli Formation



• Explorasaun foin komesa, maibe iha "oil and gas seepages" iha fatin hotu iha pais ne'e
 • Jeologikamente semelhante ho Ilha Seram, iha Banda Arc , nebe produs mina to'o ohin loron.



Aimaulin Seep



Horba Seep



Holmesel Seep



Lour Seep



Aisaleuk Seep



Atalele Seep



Aliambata Seep



Badulobo Seep

Levantamentu dadus Geofísika Aérea Integrada

SURVEI AÉREO GEOFÍSICA



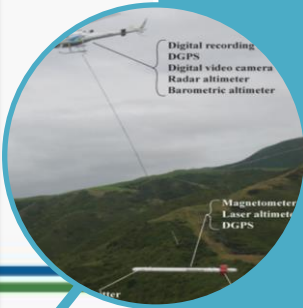
Aero Magnetic and Radiometric - (APG Pty Ltd)

Atu deteta fatuk nia Magnetismu no Radioactive (U, Th, K)



Aero Gravity - (APG Pty Ltd)

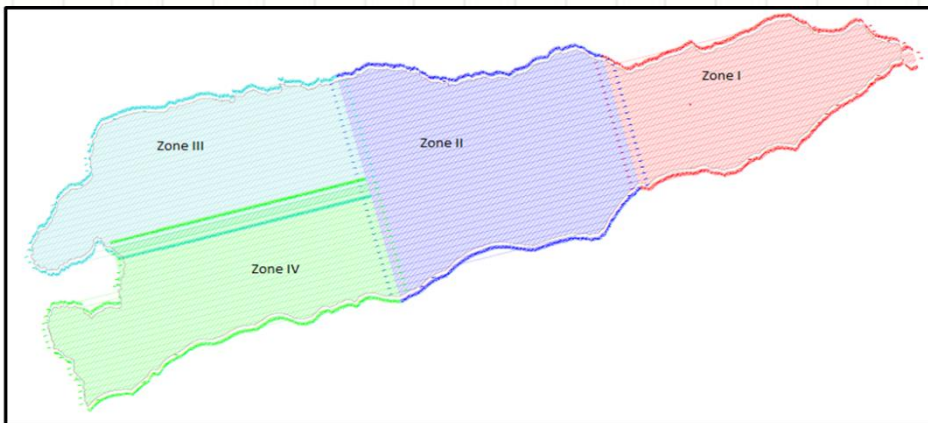
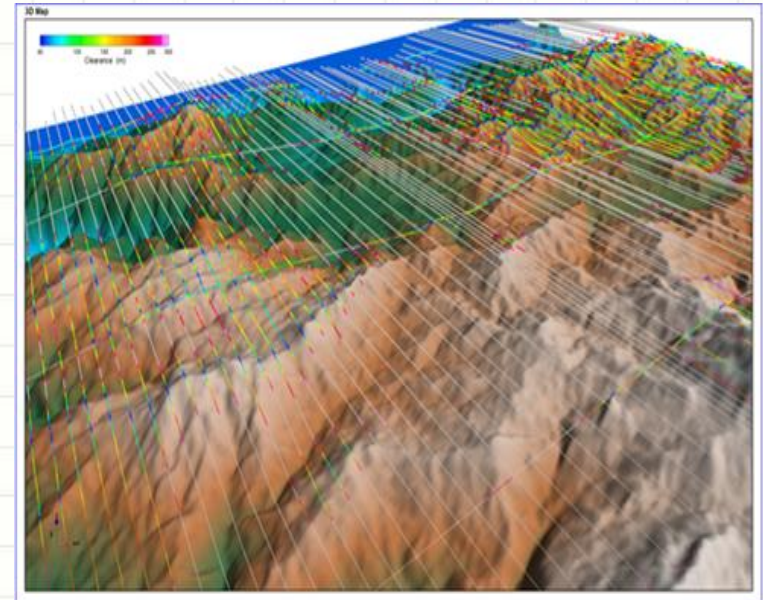
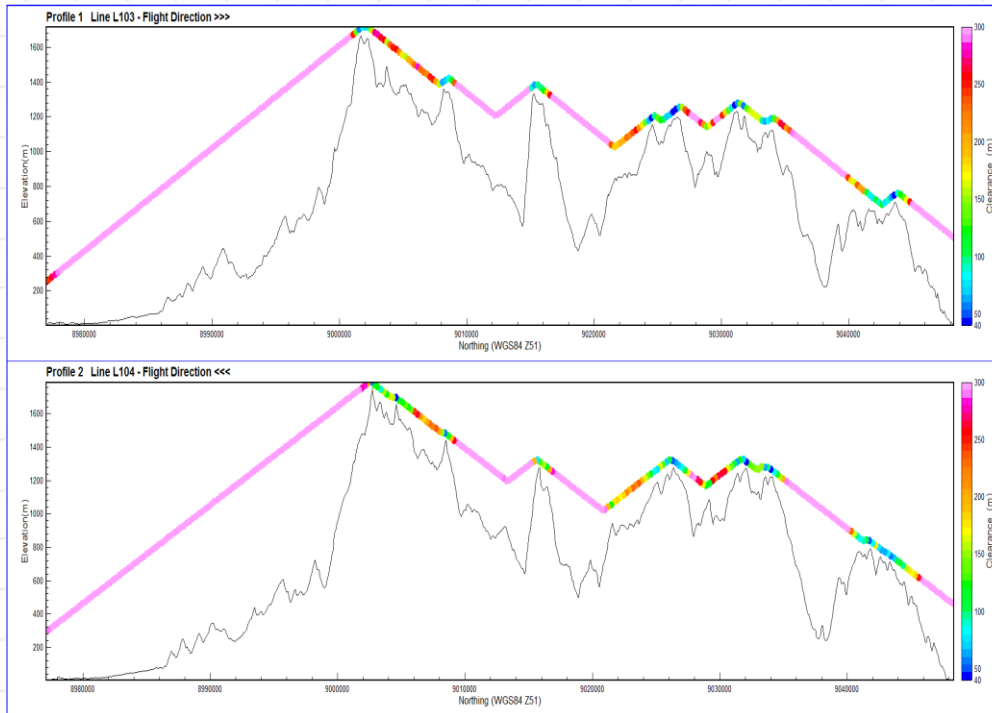
Atu deteta densidade husi fatuk



Survei Aéreo Geofísika mais detalhadu

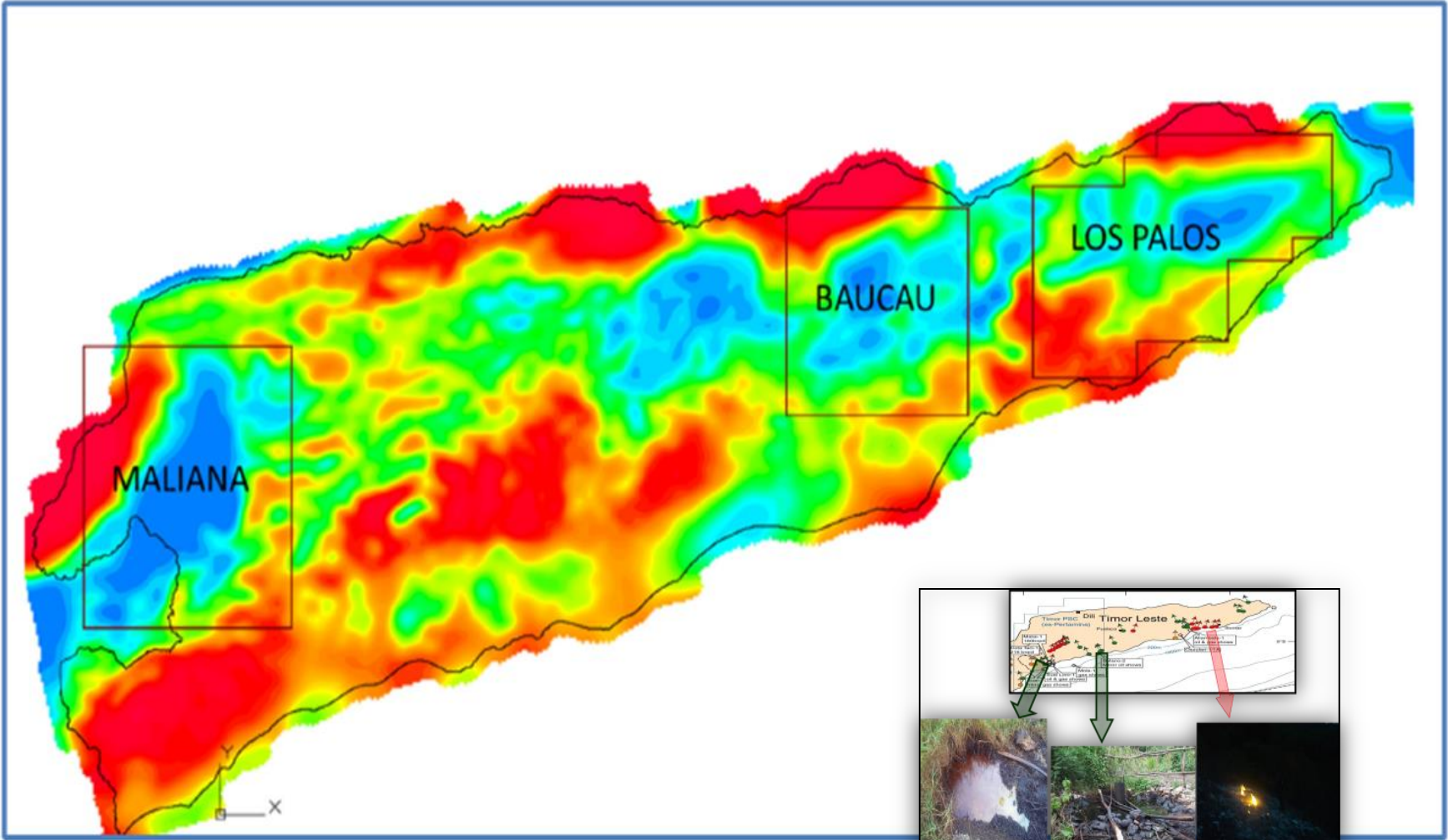
1. Magneto Telluric
2. Electromagnetic (EM) – (SkyTEM)

Operasaun levantamentu de dados



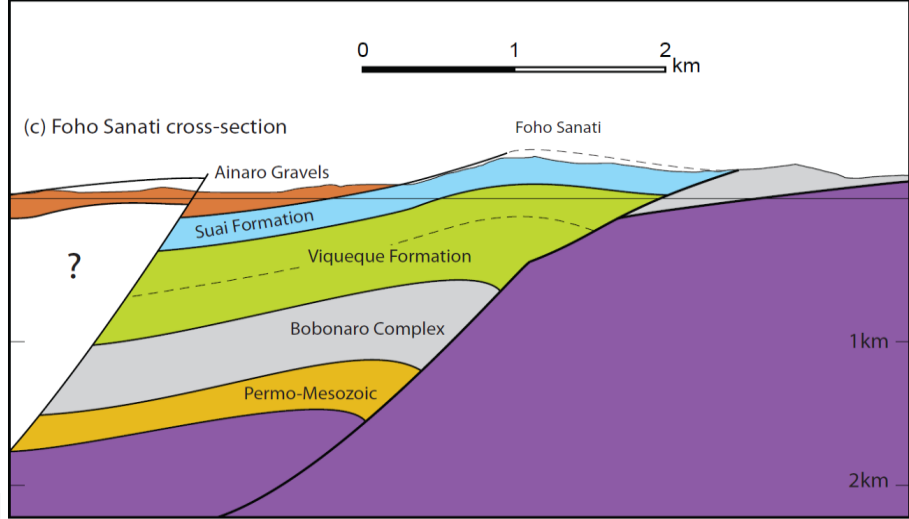
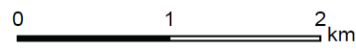
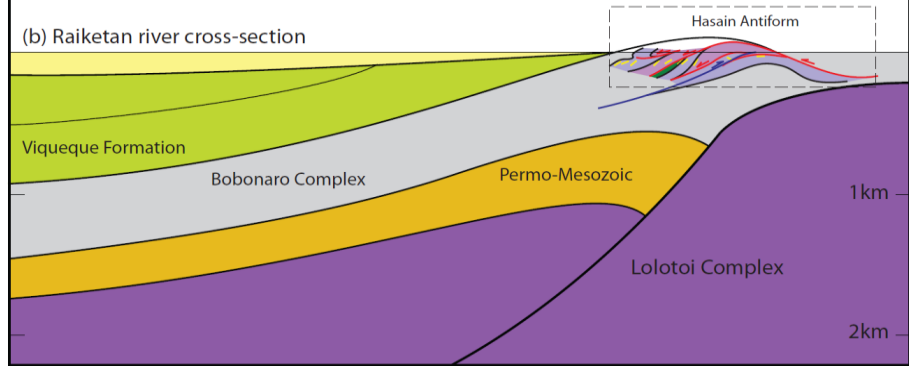
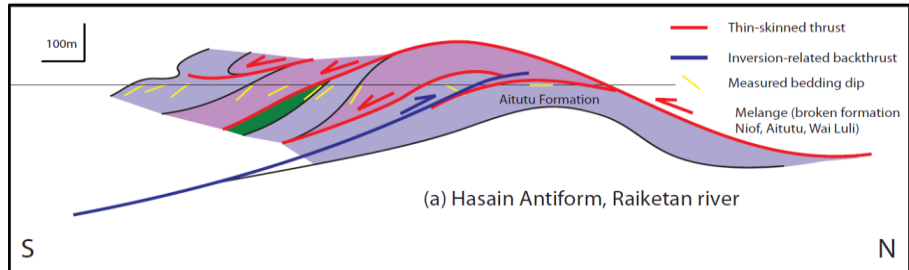
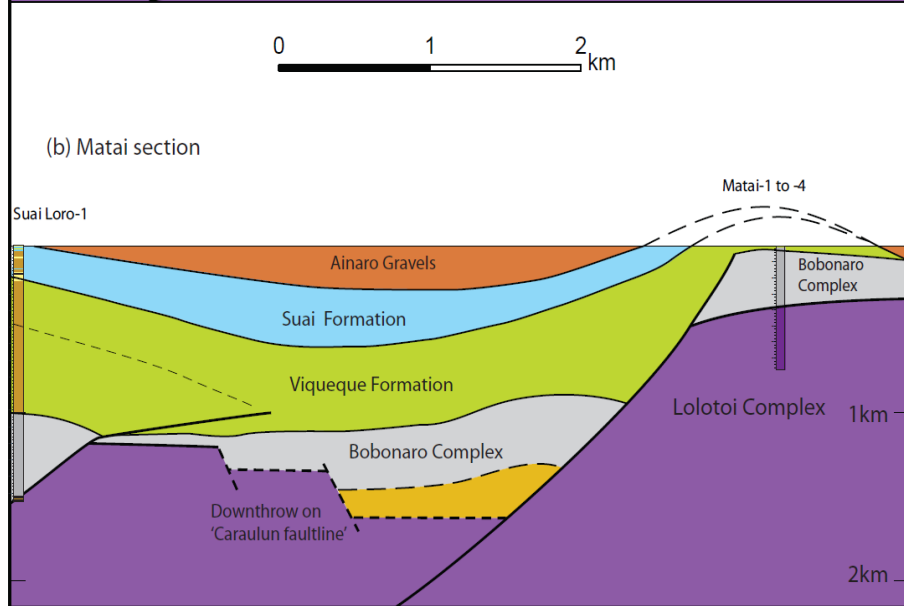
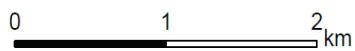
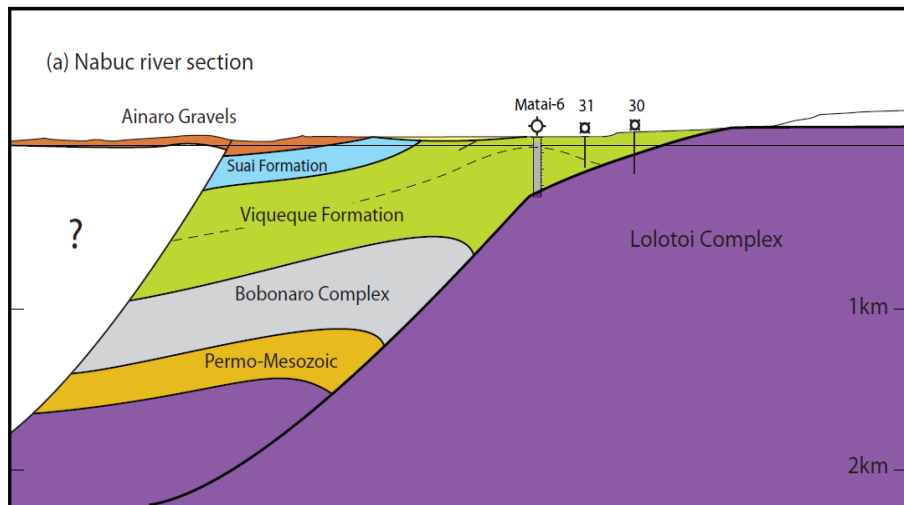
- Kondisaun Terenu Timor Leste nian defisil teb-tebes (80 - 3000 metrus),
- Rekerementu ba Aviaun Fixed Wing tenki semo ho distansia verticalmente hosi rai 300m to'o 1000m,
- Helicoper tenki semo ho distansia 80 – 150 metrues vertikalmente husi rai

BASIA SEDIMENTÁRIA BOOT 3, NE'EBÉ MAK IHA POTENSIA AKUMULA PETRÓLEO

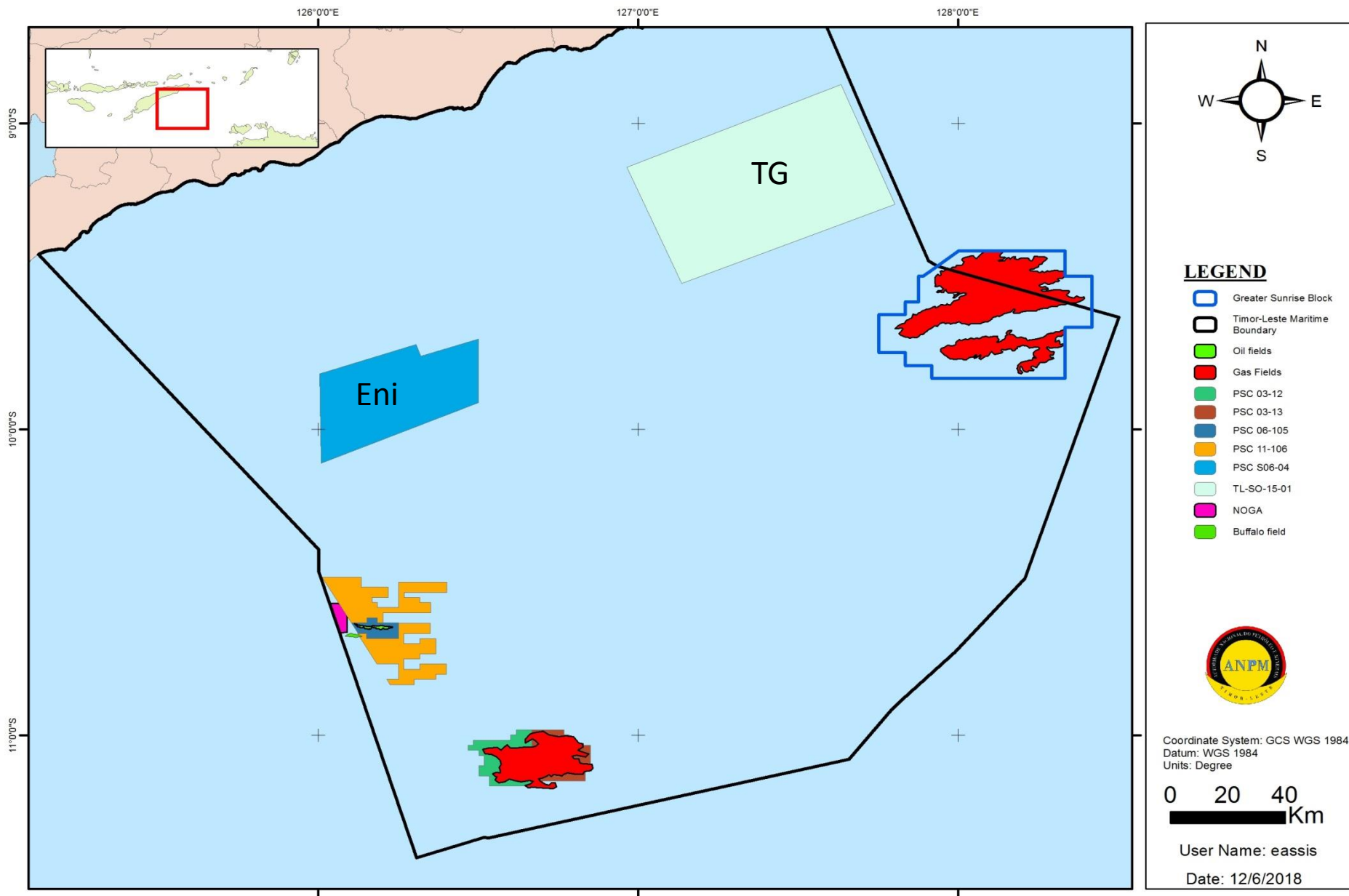


Potensial iha Bloku TIMOR GAP/Timor Resources:

RAIMARAN

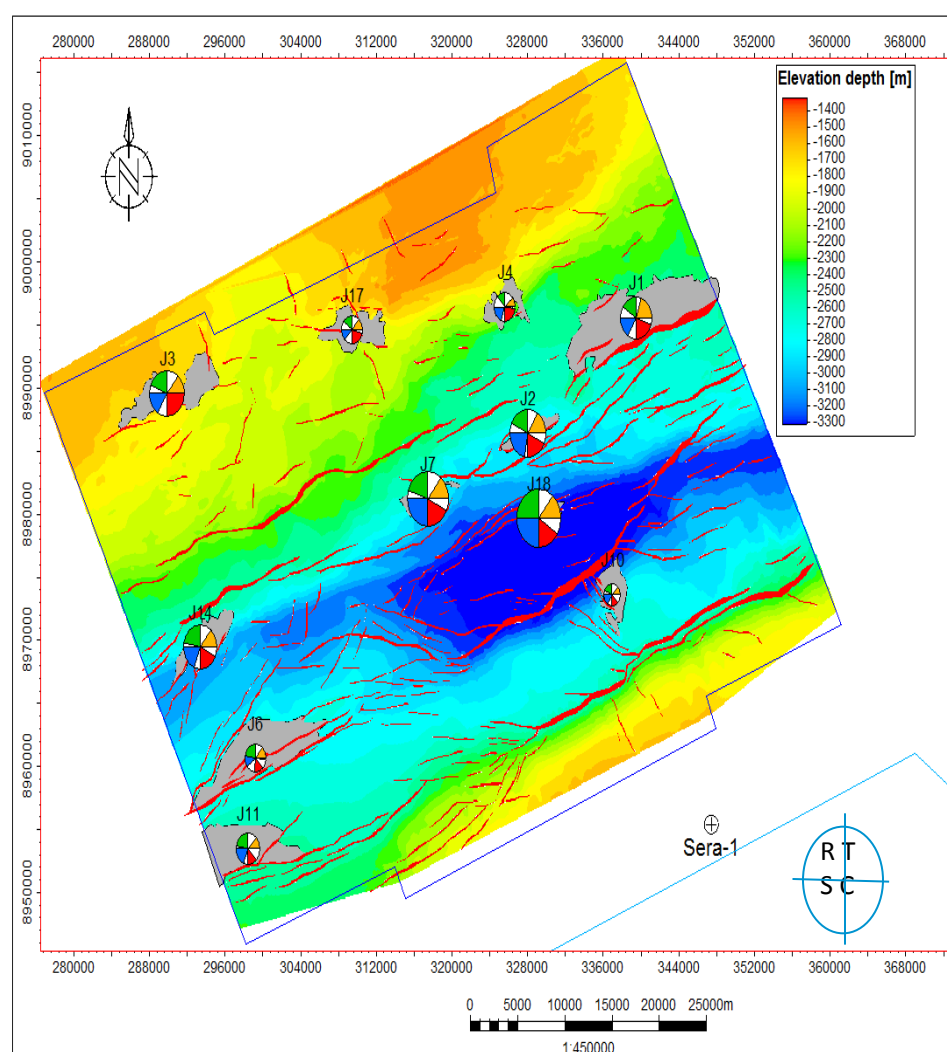


POTENSIAIS SIRA SELUK – TASI LARAN



PROSPETUS 31 maka identifikadus, iha Bloku TIMOR GAP, iha Tasi Laran

Prospects related to relevant Petroleum Systems are grouped per each system, and their geometrical characteristics are provided. Probability of Success is quantified in terms of seismic data resolution at respective level.



Prospect	WD (m)	Crest Depth BML (m)	Area (km ²)	GRV (m ³ *10 ⁶)	POS	T	R	S	C
J 1	2400	2940	59	9183	25%	80%	64%	63%	79%
J 2	2760	2740	8	437	29%	65%	71%	88%	71%
J 3	1650	4090	25	2209	28%	58%	77%	63%	100%
J 4	1870	4080	9	564	15%	43%	50%	75%	93%
J 6	2600	1450	40	7842	15%	58%	92%	50%	57%
J 7	2600	2480	8	185	34%	58%	82%	100%	71%
J 10	2700	1620	11	248	11%	50%	73%	63%	50%
J 11	2460	1640	29	1501	17%	50%	89%	75%	50%
J 14	2550	1930	13	172	27%	58%	88%	75%	71%
J 17	1700	4150	16	4161	15%	58%	60%	50%	86%
J 18	3300	2150	7	133	37%	58%	100%	100%	64%

INVENTARIZASAUN TOTAL PETROLEU IHA TIMOR-LESTE

(atu explora no dezenvolve iha tinan 50 nia laran ou liu)

- Timor-Leste ninia ‘TOTAL PETROLEUM INITIAL-IN-PLACE (PIIP)’ liu **12.6 - 45 Bilioens Barris Oleo Ekivalente (BOE)**;
- TIMOR GAP halo estimasaun katak rekursus ne’ebé bele rekuperáveis, mak **6.3 Bilioens BOE ~ US\$ 378 Bilioens (kompara ho Bayu Undan ~ 1 Biliaun BOE)**;
- Se uza kustu pur barril = US\$ 35, entaun presiza gastus ba atividades oi-oin iha enjenharia, fabrikasoens, “services” kiik to’o bót, konstrusaun, operasaun, manutensaun, explorasaun no sst, to’o valor **US\$ 220 Billioens**;
- Ne’e **valor ida bót tebes**, nudar oportunidade ba Timor-Leste atu aproveita;
- Tan ne’e, Timor-Leste hakarak dezenvolve infraestrutura no kapasidades iha atividades sira ne’e, iha dékada ida ka rua nia laran, hodi bele **kapta benefisius ekonomikus, husi gastus (osan) sira ne’e hotu** iha Timor-Leste, para alemde lukrus ne’ebé husi fahe produsaun no impostu.

2. PROJETO TASI MANE: POLO/HUB' BA DEZENVOLVIMENTO SETOR PETRÓLEO



PROJETU TASI MANE

NO LIGASAUN BA PLANU ESTRATEJIKU DEZENVOLVIMENTU

1. Iha Planu Estratéjiku Dezenvolvimentu 2011-2030, Timor-Leste hasai ona vizaun konaba dezenvolvimentu setor petroliferu;
2. Vizaun ida ne'e fó realse ba dezenvolvimentu sosiu-ekonomiku povu Timor-Leste nian, hodi la simu idea simples kona-ba retornu finanseiru deit, hanesan simu dadauk husi kampu Bayu-Undan;
3. Planu ne'e mos hatudu polos dezenvolvimentu tolu – Suai, Betano ho Beasu, hodi haklekar dezenvolvimentu ba Kosta Sul;
4. Tan ne'e, esforsu no susesu konaba delimitasaun Fronteiras Maritimas mai hatán deit Vizaun ne'ebé hakerek ona iha Planu Estratejiku Dezenvolvimentu.



TIMOR-LESTE PLANO ESTRATÉGICO DE DESENVOLVIMENTO 2011 - 2030



Vizaun ba Dezenvolvimentu ba Timor-Leste

PETRÓLEO

VISÃO GERAL E DESAFIOS

O sector do petróleo em Timor-Leste é designado, pelo Plano Estratégico de Desenvolvimento, como um pilar fundamental do nosso desenvolvimento futuro. Este sector é essencial não só para o nosso crescimento económico como também para o nosso progresso futuro, enquanto Nação bem-sucedida e estável.

Ao desenvolvermos o sector, precisamos de garantir que a riqueza de recursos naturais de Timor-Leste é utilizada para construir a nossa Nação e apoiar o nosso povo.

Actualmente Timor-Leste não possui as infra-estruturas, indústrias de apoio e recursos humanos fundamentais para fazer funcionar e gerir o nosso sector petrolífero. Isto resulta na perda de grandes oportunidades para o nosso povo e para a nossa Nação.

O aproveitamento destas oportunidades e a expansão do sector petrolífero criarão bases sólidas para o desenvolvimento de uma indústria bem-sucedida, de exportação e de prestação de serviços, com um sector privado maduro e em crescimento.

ESTRATEGIA E ACÇÕES

Aproveitaremos ao máximo a nossa riqueza, em termos de petróleo e gás, pelo estabelecimento de uma Companhia Nacional de Petróleo e desenvolvimento do projecto Tasi Mane na costa Sul, facilitando, aos nossos cidadãos, as qualificações e experiência de que necessitam, para liderar e gerir o desenvolvimento da nossa indústria petrolífera. Continuaremos o nosso compromisso em relação à transparência da contabilidade das receitas do sector petrolífero.

Para dar resposta aos desafios futuros, serão dados os seguintes passos:

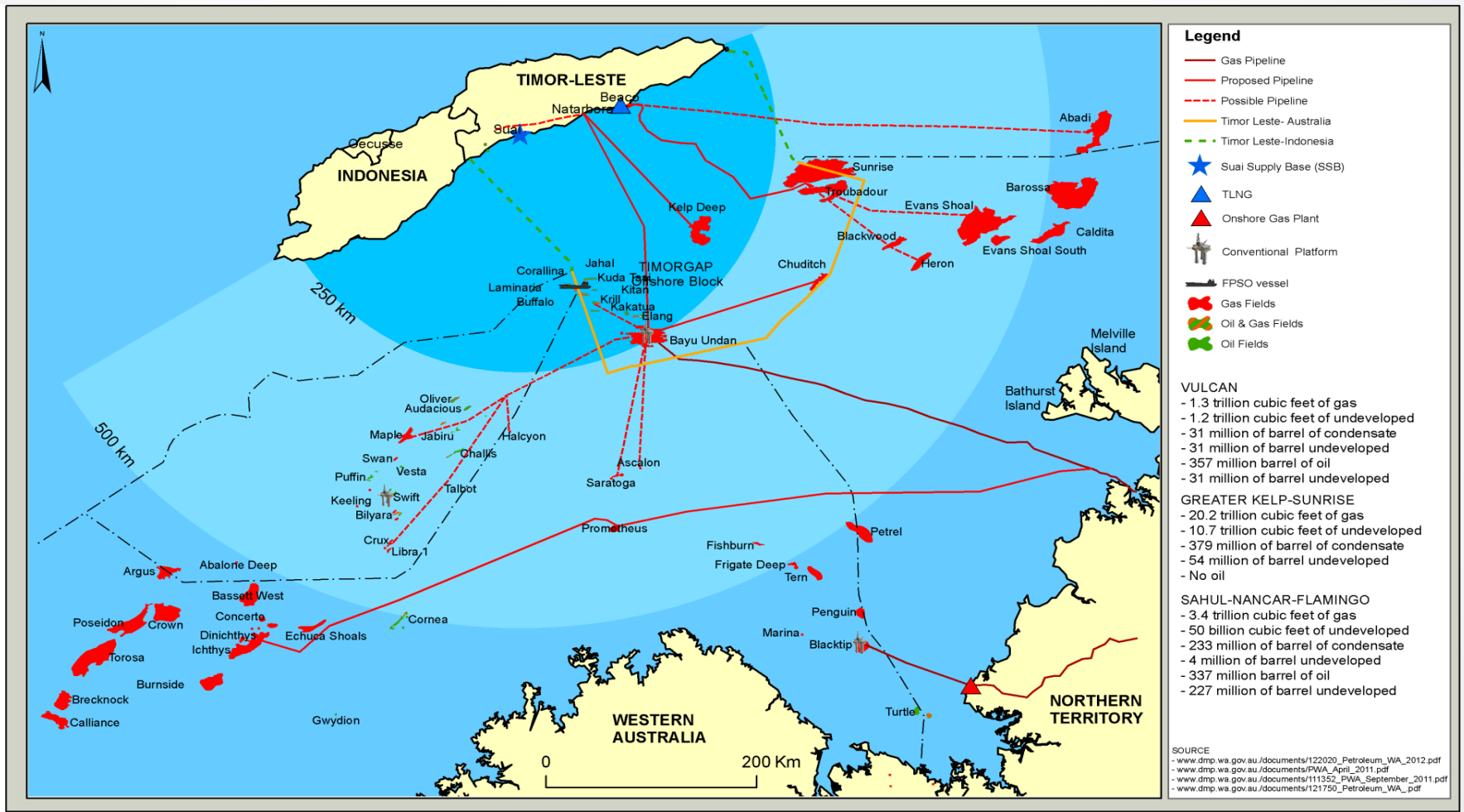
- As receitas petrolíferas continuarão a ser transparentes e utilizadas para apoiar o desenvolvimento social e económico.
- Será desenvolvida uma indústria petrolífera que opere com o máximo de participação de cidadãos e empresas timorenses.
- Serão melhorados e desenvolvidos os recursos humanos necessários para o funcionamento da indústria petrolífera.
- A costa sul será desenvolvida para apoiar a expansão da nossa indústria petrolífera interna, incluindo o estabelecimento das infra-estruturas vitais.

“Quero que o nosso petróleo seja utilizado para criar a nossa própria indústria e dar emprego aos timorenses.”

Professor, Hatuloa, distrito de Ermera, Consulta Nacional, 13 de Julho de 2010

Halo Timor-Leste sai 'hub' ba desenvolvimento Indústria Petrolifera

REKURSUS GAS BARAK SEI PRESIZA EXPLORA NO DEZENVOLVE



A) SUAI SUPPLY BASE: POTENSIAL BA ‘SERVICES’ IHA OIL & GAS

Timor-Leste sei harí no opera **Suai Supply Base (SSB)** atu fó apoiu ba atividades petróleo hotu, iha **Raimaran** no **Tasi-laran** Timor-Leste no mos iha reijaun Tasi Timor tomak.

SSB inklui portu ida ho kle’an to’o 9 metrus, ne’ebé iha portus atrakajen; sei iha mos muru-protesaun, ka “kebramar”,ho naruk liu kilometru 3; sei iha mos “mini-shore bases”, no fatin armazém, ‘yard’ no ‘open area’, ho luan to’o 1000 hectares, hodi bele uza ba *industrias, fabrikasoens, fuel bunkering, catering, waste management, pipe threading and repairing, storage and warehousing, wirelines, drilling mud services, seismic and drilling services, supply vessels, tug boats, compressors & pumps repairs, spare parts supplies, emergency & oil spill response services’, sst.*



AREA LOCATION
SSB: 1113 ha | NOVA SUAI: 213 ha

EZEMPLU: 'SERVICES'



Supply Base Management

- Manpower
- Supporting facilities
- Waste management
- Repair and maintenance



Port Services

- Berthing space booking
- Vessel clearance
- Customs & immigration
- Crew change

Vessel Supply

- Fuel
- Water
- Food (meat, fruits & vegetables, ...)
- Other provisions

Cargo Handling at Quay

- Stevedoring
- Heavy equipment
- Trucking
- Liquid mud transfer

Cargo Handling at Base

- Labor
- Heavy equipment
- Trucking



EXEMPLU: 'SERVICES'



Marine Services

- Rig Agency
- Rig/Vessel Lay-up
- Tug Boats
- Vessel Chartering
- AHTS & PSVs
- Rig Tow
- Crew Change



Facility Rent & Management

- Warehouse /Yard Management
- Bulk Plant Area
- Port-a-camp
- Office Space
- Equipment Rental
- Cargo Handling
- Security Services
- Waste Management
- Fuel/Water Supply



Supply Chain Services

- International Transportation
- Customs Clearance
- Heavy Lift Transportation
- Material Management
- Dangerous Goods Handling
- Hand-Carry & Hotshot
- Air/Sea Chartering
- Helicopter Operations



Oilfield Support Services

- Engineering
- Fabrications (small to big)
- CCU & Basket Rental
- Equipment Rental
- Manpower Supply
- Inspection Services
- Procurement Services
- Oil Spill Response
- Maintenance Services
- Pipe Repair & Threading
- Seismic Surveys
- Drilling Rigs Stations
- Drilling Muds
- Bunkering

Nota: Atividades sira iha leten naturalmente sei estimula dezvoltimentu agrikultura, peskas, no atividades ekonomia ba setor privadu, husi eskala ki'ik to mediu ('small to medium enterprises'). Produsaun alimentar, aifuan, no nesesidades diarias ba ema sira ne'ebé servisu iha industria ne'e no sei fo insentiva ita nia to'os nain sira atu bele produz ho kuantidade no qualidade ás liu tan.

Supply Services



24/7 operation



Cargo loading/unloading



Cargo lifters



Photos: Altus; Lamongan Shore Base; Eastern Pacific Industrial Corporation Berhad (Kemaman Supply Base)

Fuel Supply



Fuel Storage



Inspection Areas



Rigging & Slings



Photos: Altus; Lamongan Shore Base; Eastern Pacific Industrial Corporation Berhad (Kemaman Supply Base)

Pipe racking, fuel tanks and warehouses



Oil rigs parking for supply/maintenance



Welding



Fabrication



Waste Management



Drilling Muds & Silos



Chemical Warehouse



Repairs & Maintenance



Photos: Altus; Lamongan Shore Base; Eastern Pacific Industrial Corporation Berhad (Kemaman Supply Base)

Ezemplu :

INVITATION FOR EXPRESSION OF INTEREST (EOI)

Maersk Drilling and Eni, as operator of the joint venture named JPDA 11-106, have signed a one-well contract for Mærsk Deliverer for exploration drilling in the Timor Sea. The firm contract is expected to commence in March 2019 and has an estimated duration of two months. The contract contains an option for an additional well with an expected duration of another two months.

Maersk Drilling supports global oil and gas production by providing high-efficiency drilling services to oil companies around the world. Maersk Drilling's modern fleet counts 24 drilling rigs including drill ships, deepwater semi-submersibles and high-end jack-up rigs.

As part of executing the drilling campaign, Maersk Drilling will be using a quota of local personnel and procuring goods and services from local suppliers, hereby contributing to the local economy. In line with this commitment, Maersk Drilling hereby invites qualified local suppliers for the following goods and services:

Accommodation / Offshore Catering / Food supplies / Logistics (customs clearance, local transportation, etc.) / Husbandry (visa services, hotel bookings, onshore personnel transportation and security, vehicle rental, etc.) / PPE (hard hat, goggles, gloves, etc.) / Medical supplies / Stationery / Welding shop / General consumables (rope, soap, dope i.e. rig wash, lubricant, greases) / Hand tools (wrenches, pliers, hammers etc.)

Submission of Expression of Interest (EOI)

Interested parties shall submit: (1) Cover Letter, (2) Company Registration, and (3) Vendor Profile, which includes, but not limited to: company structure, capacity profile, contact details, customer references, and Quality & HSE systems. Suppliers shall submit the EOI by email to EOI@maerskdrilling.com not later than 19th of December 2018.

The EOI does not constitute solicitation

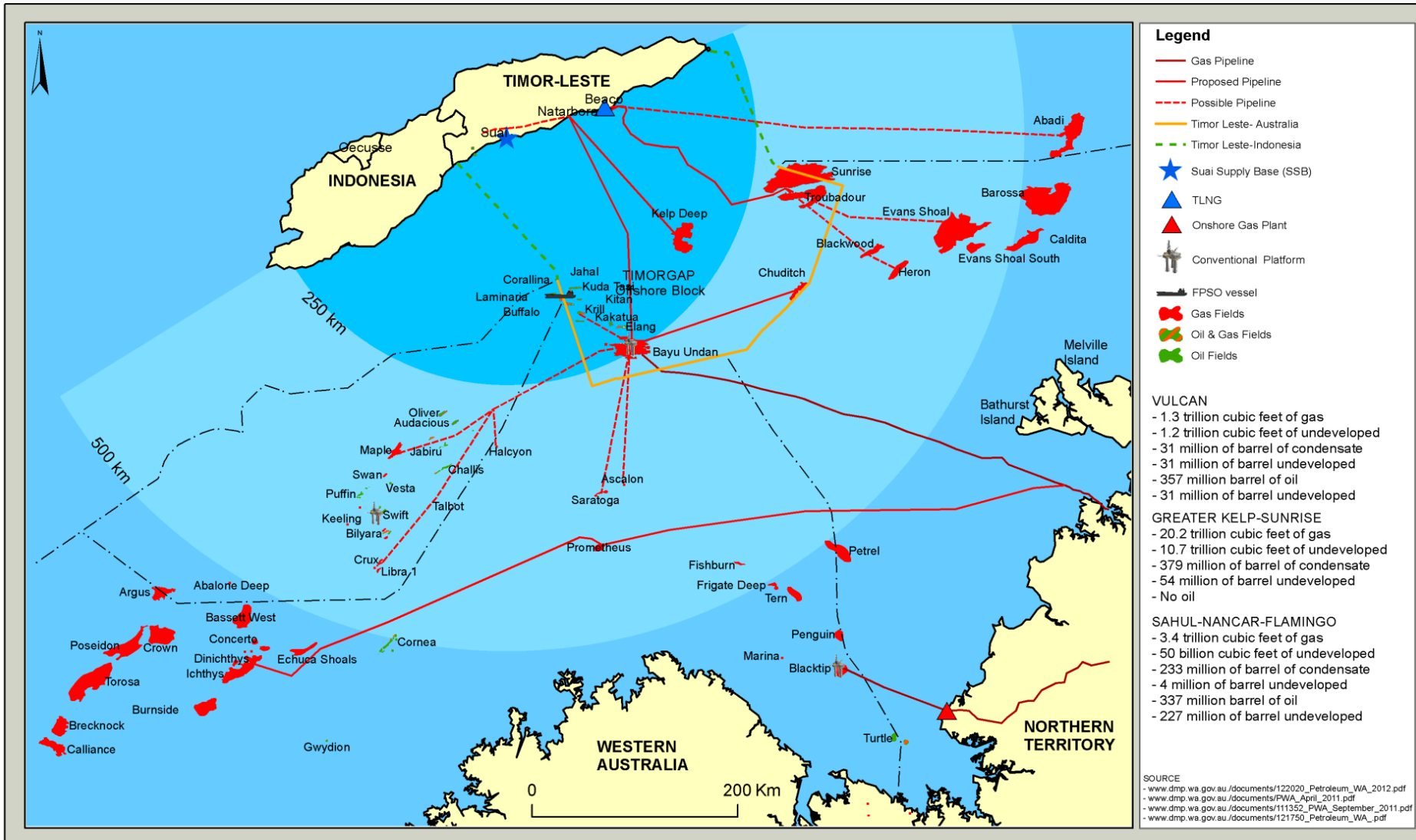
A response to the invitation for EOI does not ensure selection for future bids/tenders. Maersk Drilling, at its own discretion, shall invite suppliers deemed eligible to participate in a Supplier Day to be held in Dili on the 8th of January 2019. Details shall be provided by email to invited suppliers.

LATE SUBMISSIONS WILL NOT BE CONSIDERED



**MAERSK
DRILLING**

ÁREA KOBERTURA SSB: KAMPUS BARAK



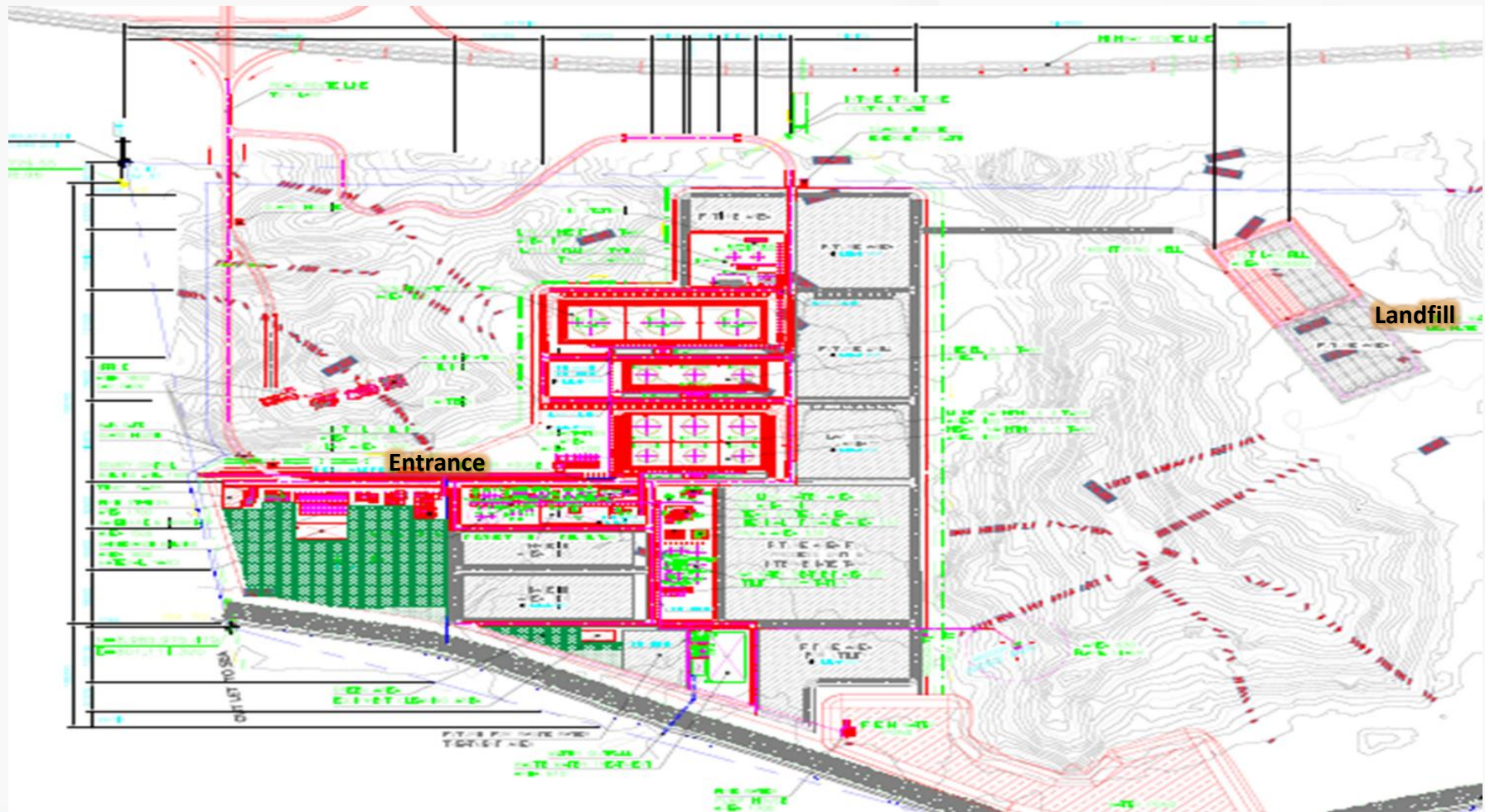
B) DOWNSTREAM: PLANU ATIVIDADES

Iha downstream, Timor-Leste sei harí :

- Refinarias
- Industrias Petrokimikas (inklui fertilizantes, sst)
- Planta LNG (gas)
- Pipelines/Kadoras no 'LNG Tankers'

Atu implementa planus sira ne'e, Governu Timor-Leste hala'o ona estudus, inklui Pipeline FEED, LNG Pre-FEED, Refinery FEED. Estudus hirak ne'e mai husi kompanhias enjenharia ho reputasaun ás iha mundu, hanesan JP Kenny, AMEC-Foster Wheeler no Worley Parsons, sst.

i) REFINARIA BETANO & INDUSTRIAS PETROKIMIKAS

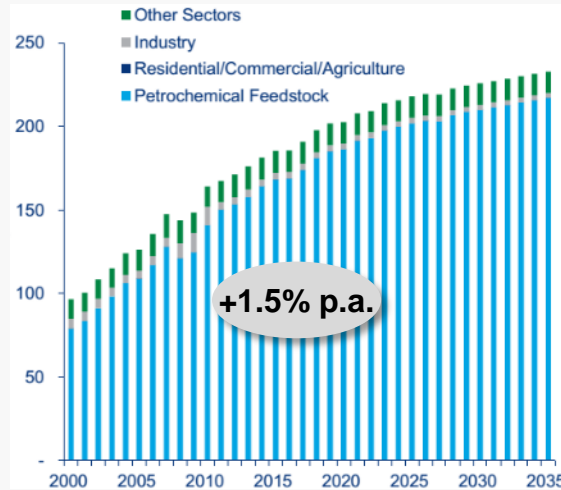


+X% p.a. Average annual growth rate

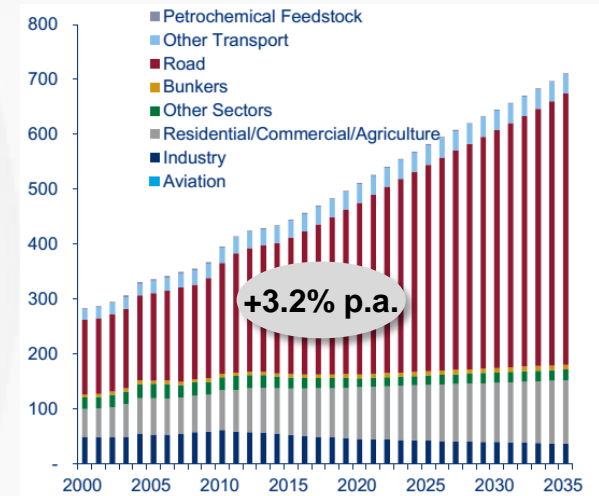
PROJESAUN BA “DEMANDA”

Asia

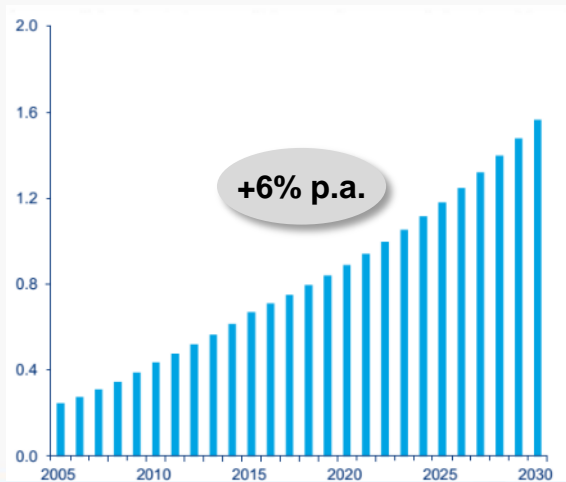
Naphtha (million tonnes)



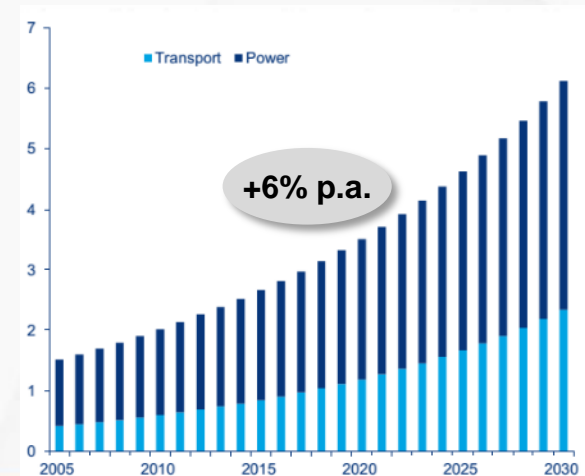
Diesel/Gasoil (million tonnes)



Gasoline (kbpd*)



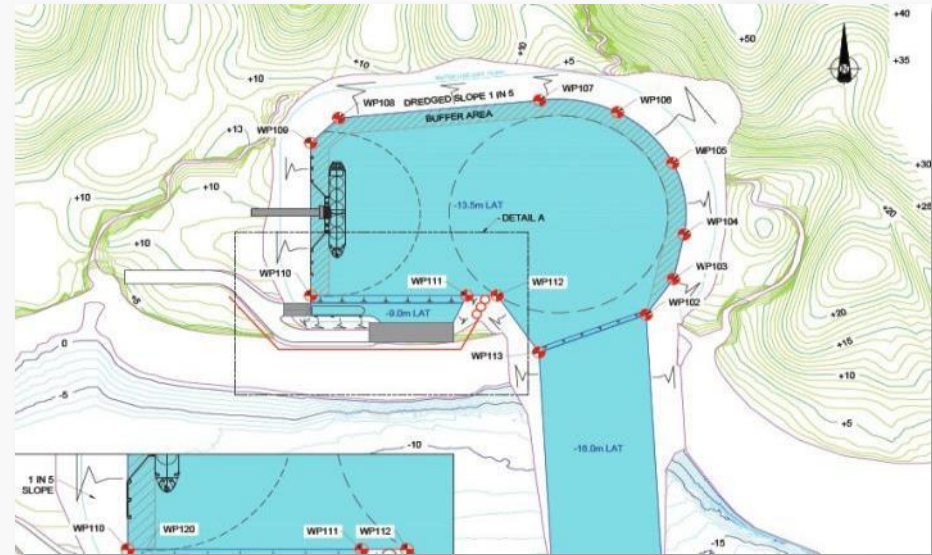
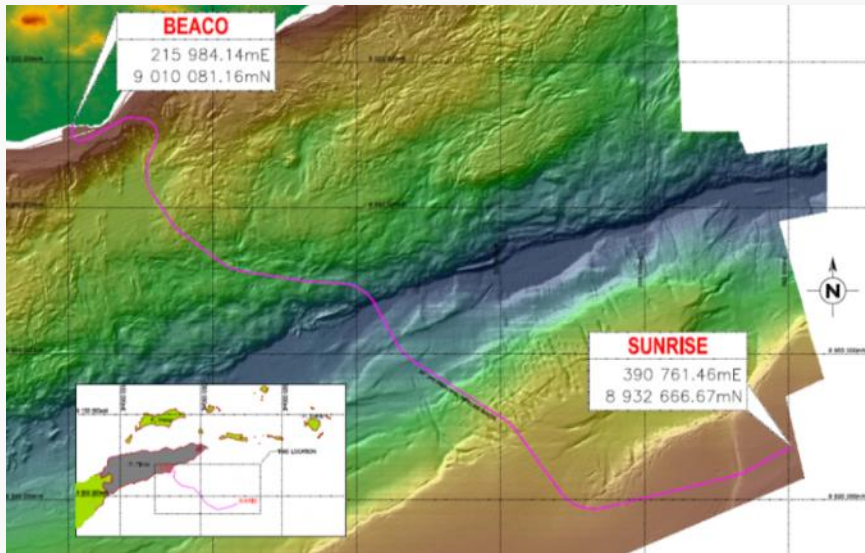
Diesel (kbpd*)



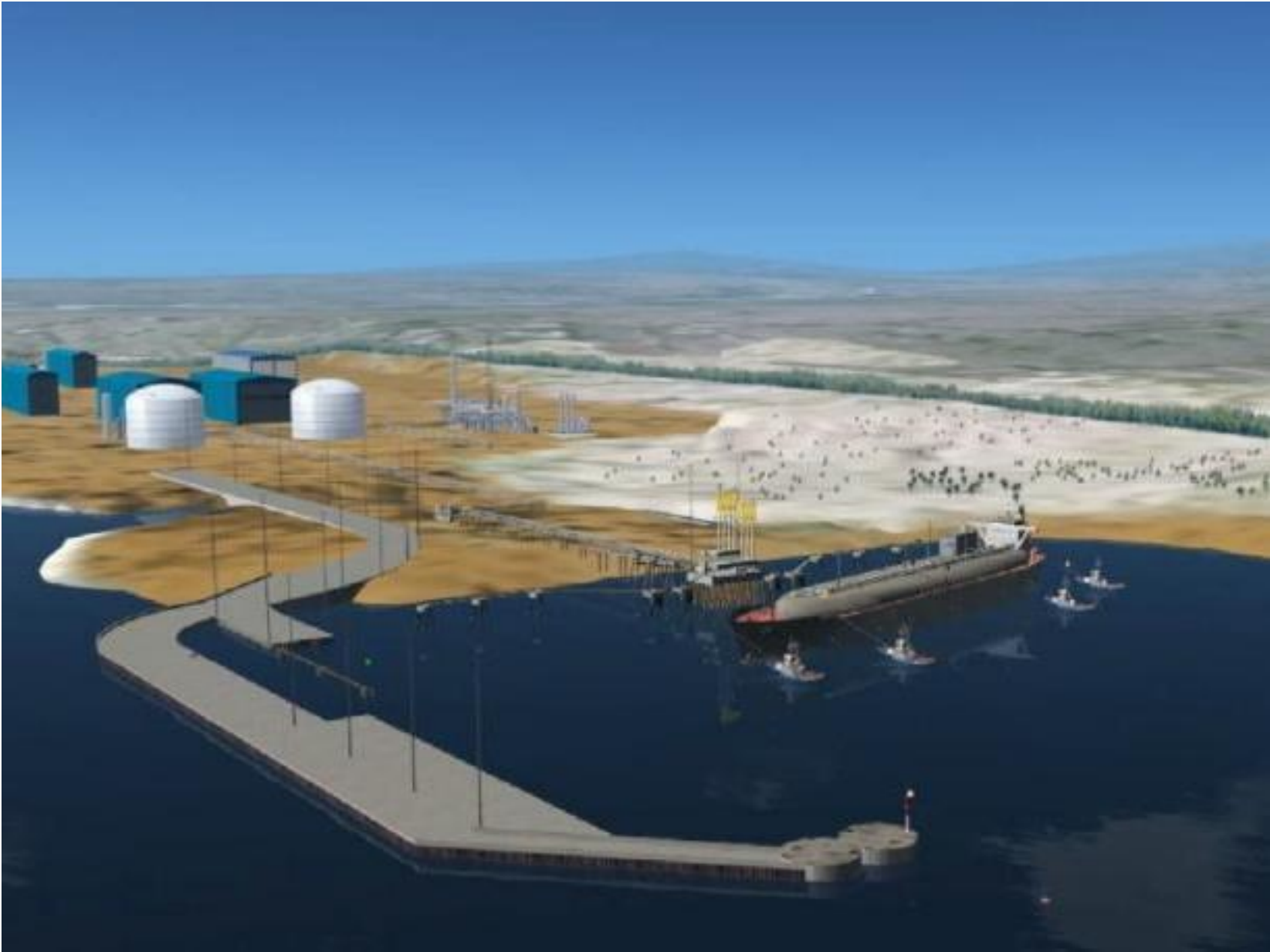
ii) BEAÇO LNG PLANT & PIPELINE

Beaço mak sei sai fatin ba Planta LNG no sei simu Kadoras/Pipeline husi GS.

Planta LNG mak fatin ba prosesamentu gas husi GS.

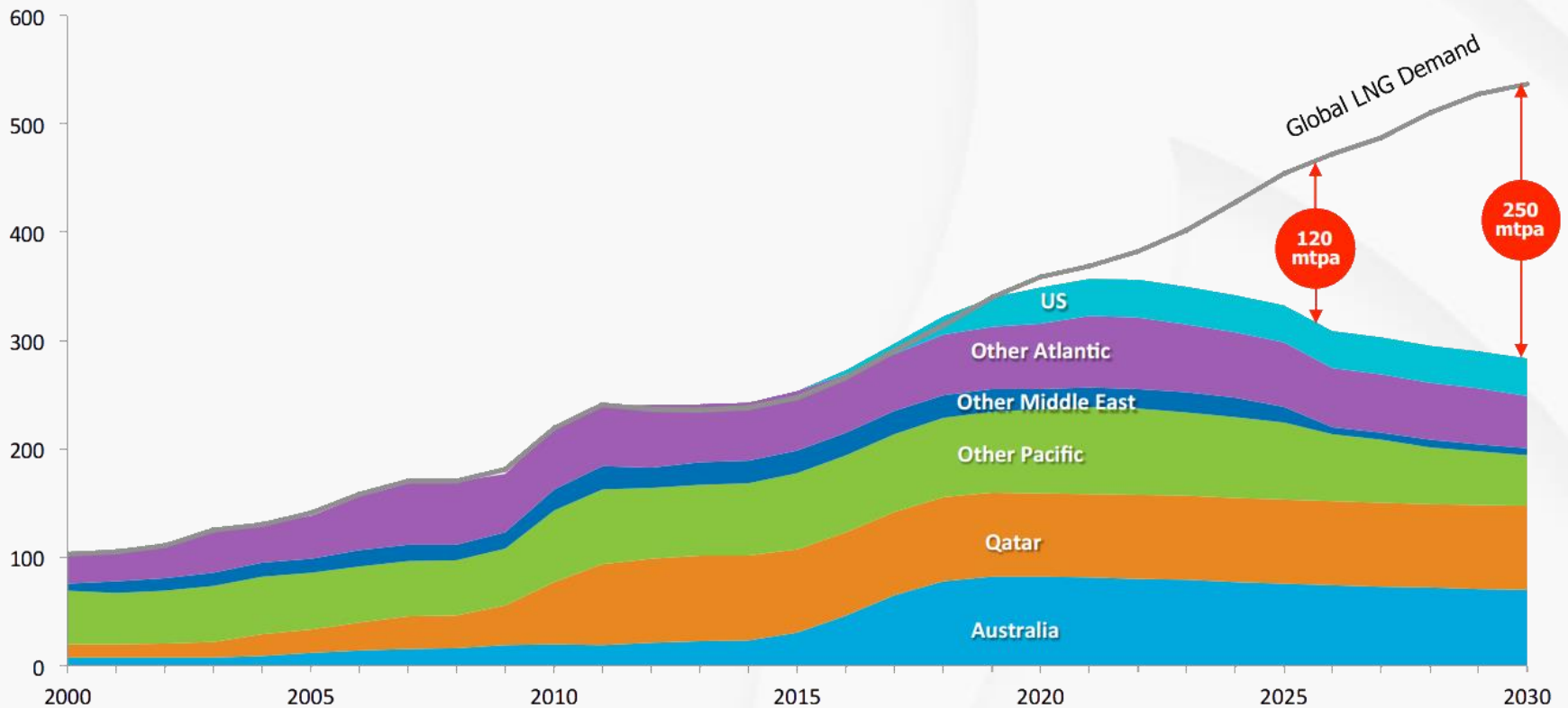


- PIPELINE AND DETAILED MARINE SURVEY (DMS), FEED LEVEL ✓ COMPLETED
- MARINE FACILITY (LNG PORT), FEED ✓ COMPLETED
- LNG PLANT – FEASIBILITY ✓ COMPLETED



Nesesinde de merkadu iha LNG SUPPLY & DEMAND

Global LNG demand vs. LNG supply by region (mtpa*)



3) ESTUDU VIABILIDADE - HALA'O TIHA ONA:

ACIL ALLEN Consulting

ACIL ALLEN CONSULTING

REPORT TO
TIMOR GAP E.P.
30 AUGUST 2016

TASI MANE PROJECT



POTENTIAL
IMPLICATIONS FOR THE
ECONOMY OF TIMOR-
LESTE



disclose the revenues it receives from extractive companies operating in the country. It must publish reports disclosing revenues from the extraction of Timor-Leste's natural resources and payments it receives from those companies. Companies extracting resources must also report payments they make to governments. These various reports are reconciled by an independent party and are then reported on in an EITI Report (Extractive Industries Transparency Initiative, 2015b). Timor-Leste is the first country in the Asia-Pacific region and third in the world to achieve full EITI compliance.

Forecasts

The Timor-Leste Government forecasts that total State Budget expenditure will increase between 2015 and 2019 while having material year-on-year variations. Expenditure is forecast to be \$2,089 billion in 2016, reducing slightly to \$2,033 billion in 2017, then reducing to \$1,840 billion in 2018 and then \$1,645 billion in 2019. Capital expenditure is the major contributor to this year-on-year variation in expenditure with \$468 million in 2015, \$933 million in 2016, \$833 million in 2017 and then \$350

TASI MANE PROJECT POTENTIAL IMPLICATIONS FOR THE ECONOMY OF TIMOR-LESTE

61

ACIL ALLEN CONSULTING

million in 2019. Other expenditure components are forecast to increase gradually to 2019 (Government of Timor-Leste, 2015a).

The Timor-Leste Government forecasts that domestic taxation revenue will continue growing from \$179 million in 2015 to \$209 million in 2019 (Government of Timor-Leste, 2015a). The State Budget is forecast to still be strongly dependent on funding from the Petroleum Fund in 2019.

4.2 Estimation of indirect economic impacts

Large, complex resource and infrastructure projects such as the integrated Tasi Mane project can be expected to have indirect economic impacts that are felt throughout the host economy. These economic impacts arise because the various sectors of the economy are interrelated: the output of one economic sector provides inputs to other economic sectors. These interrelationships can be represented in what are referred to as "input-output tables". The inputs of labour and capital required to undertake a major infrastructure project will tend to draw resources away from some sectors of the economy, while providing growth opportunities for other supporting sectors. Hence it is usual to find that some economic sectors benefit from the development while other economic sectors may experience adverse changes.

FIGURE 4.3 KEY ELEMENTS OF THE ECONOMIC IMPACT ANALYSIS

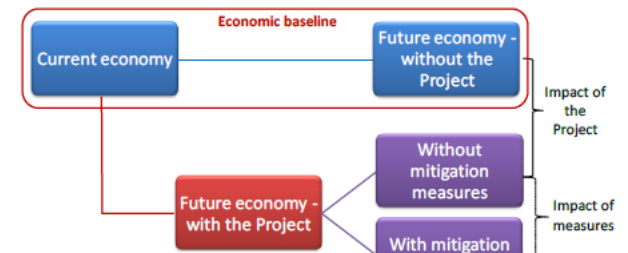
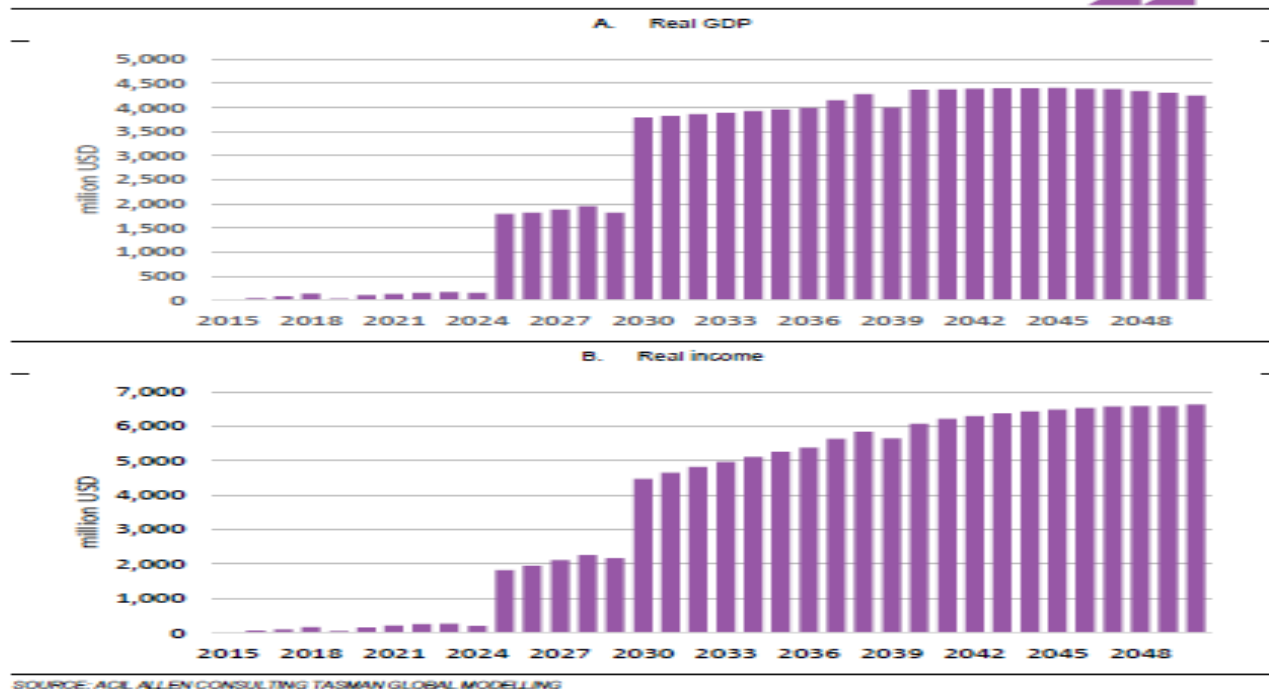


FIGURE 4.7 CHANGE IN TIMOR-LESTE REAL GDP AND REAL INCOME AS A RESULT OF THE TASI MANE PROJECT (BASE CASE), RELATIVE TO THE REFERENCE CASE (IN 2015 TERMS)



Real GDP

Over the period 2015 to 2050 the Tasi Mane Project is projected to increase the real GDP of Timor-Leste by a cumulative total of US\$98 billion (with a net present value of US\$22.1 billion, using a 7 per cent real discount rate). To place this in perspective, the discounted present value is more than five times greater than Timor-Leste's 2015 estimated total GDP and nearly 15 times the estimated non-oil sector GDP. This is a very significant change arising from a single project.

The projected impact of the project on real GDP largely follows the profile of the revenues generated by the project. The impact of the US\$8.2 billion capital expenditure between 2015 and 2024, prior to first production of the LNG in 2025, is small compared to the operations phase. This occurs for two reasons. First, the majority (88 per cent) of the capital expenditure is on foreign equipment and foreign labour, hence the increase in investment is largely offset by a simultaneous increase in imports (see Figure 4.8). Second, it is the operations phase that generates the key benefits of the Project – namely, through the monetisation of otherwise unutilised resources. In contrast, the construction phase is largely increasing demand for scarce factors of production and so has a smaller effect on GDP compared to the size of the investment. Another way to view this is to note that investment is an alternative form of consumption. All else being equal, it does not add to the productive capacity of the

4. PROGRESU BALUN IHA PROJETU TASI MANE:

1. Konstrusaun Aeroportu Suai – Kompletu no operasional ona;
2. Uma ba Komunitade - Lohorai hotu ona;
3. Faze Primeira Autoestrada – Kompletu ona;
4. Suai Supply Base – Sei pendente, hodi hein desizaun Governu;
5. Refinaria – Estudus hotu ona – hein ‘Final Investment Decision/FID’;
6. Kadoras/Pipeline no LNG Plant iha Beasu – hein aprovasaun ‘Development Concept’;

AEROPORTU SUAI



15/04/2017

View of runway 34 Suai airport project



View of ATCT Building

LOHORAI – BAIRRU FOUN



PROJETU AUTOESTRADA

Courtesy of PMU – Ministry of Public Work

- o Project Photo (Jul 2018):



-9.17931, 125.44898, 121.0m
Jul 17, 2018, 12:58:44 PM



Jul 17, 2018, 12:49:48 PM

Courtesy of PMU – Ministry of Public Work

○ Project Photo:





Obrigado wa'in