

Vantajen husi Delimitasaun Fronteira Maritima
no
Partisipasaun Timor-Leste iha Joint Venture

ba

DEZENVOLVIMENTU KAMPU GREATER SUNRISE

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8 - Dec_2018

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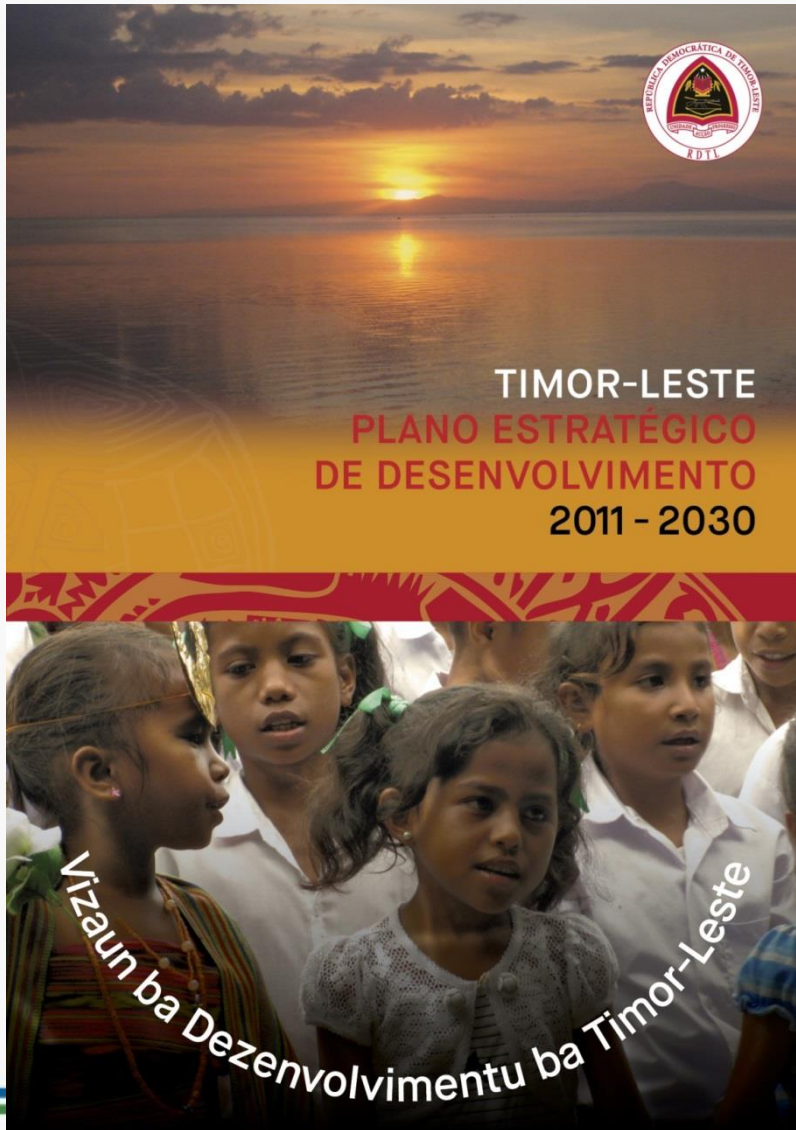
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Konteudu apresentasaun:

1. Vantajen husi Delimitasaun Fronteira Maritima ba Kampu Greater Sunrise – Impaktu husi Tratadu 6 de Marsu 2018
2. Vantajen husi Partisipasaun 56.56% Timor-Leste nian, iha ‘Upstream’ Greater Sunrise – Impaktu husi Sosa Asoens CoP+Shell
3. Benefisius ne’ebé sei hetan husi projetu Greater Sunrise ba dezvoltamentu Timor-Leste (finanseiru, sosiu-ekonomiku, no estratejiku)
4. Preparasoens iha pasadu: Estudus ba viabilidade teknika no komersial
5. Planu kona-ba tempu ezelesaun projetu tomak Greater Sunrise nian (Upstream ho Downstream) no estratéjia kona-ba finansiamentu

Dezenvolvimentu GS liu Planta LNG iha Beasu: Parte ida husi Planu Dezenvolvimentu Estratéjiku



TIMOR-LESTE PLANO ESTRATÉGICO DE DESENVOLVIMENTO 2011 - 2030

Beaço LNG-Plant cluster

The Beaço LNG-Plant cluster will be the area in which the natural gas pipeline reaches Timor-Leste land and where the LNG plant to process the gas will be located. This cluster will incorporate the LNG-Plant complex and the Nova Beaço and Nova Viqueque developments. The existing airport at Viqueque will be refurbished with the capacity to operate as a fly-in-fly-out airport for LNG Plant operators, as well as serving as a regional airport.

The first phase of the LNG-Plant development will establish a production capacity of 5 million tonnes per annum (MPTA) or one train, which may be expanded in the future to a capacity of up-to 20 MTPA or four trains.

To connect the three clusters and support growth of the petroleum industry, a road will be built from Suai to Beaço. This road will be built in stages. Each stage will be developed according to economic need and the growth of the industry. The project will commence by 2015 and be completed by at least 2020.

Tasi Mane project phases

The Tasi Mane project will be undertaken over a 20-year period and comprise four stages, with stage 1 commencing immediately. The four stages are:

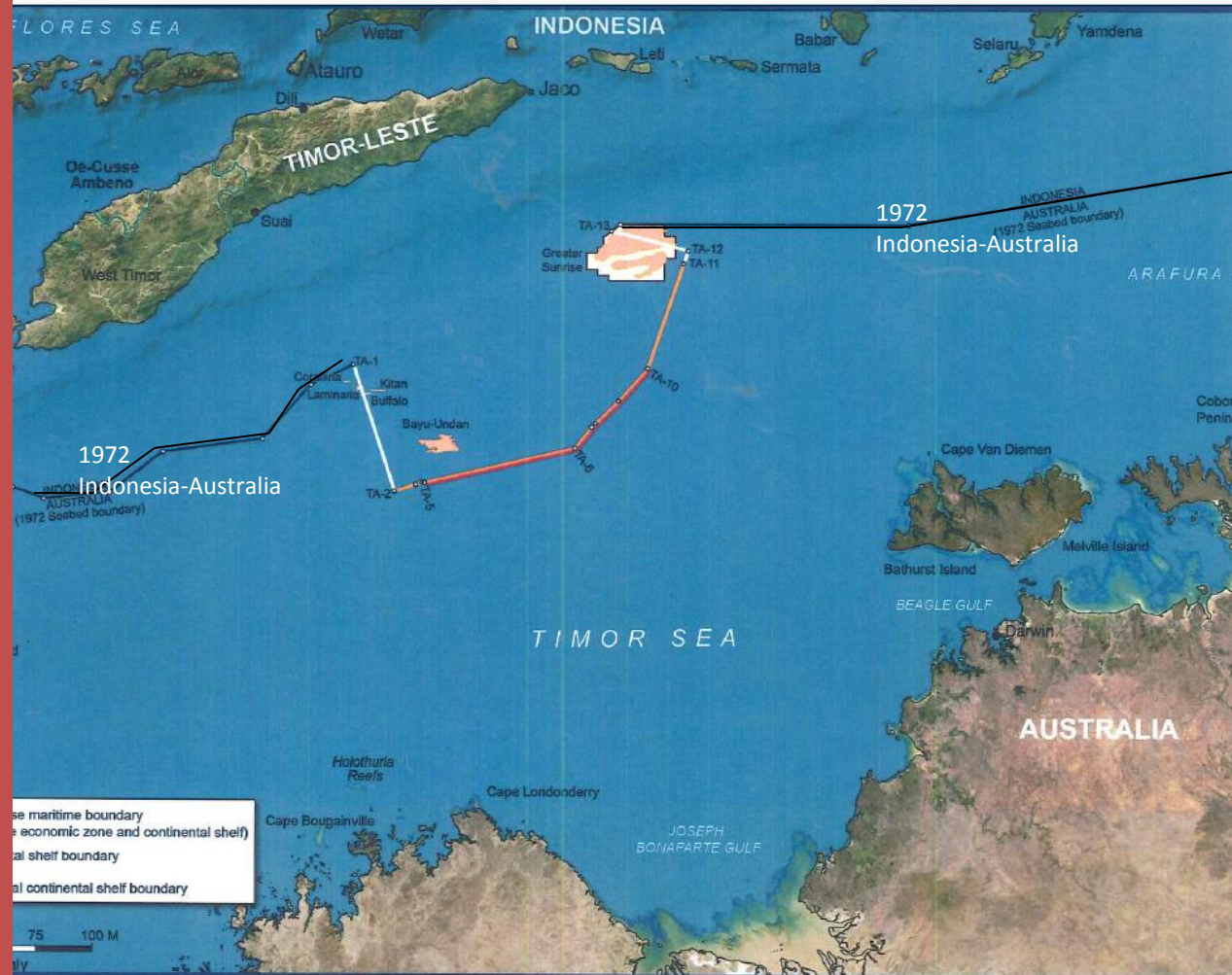
- **1st stage: 2011-2013** This will include the commencement of the first phase of Suai Supply Base, which will include the construction of a seaport with breakwater in the Kamanasa area, warehouses, office space and utilities along with the rehabilitation of the Suai airport and rehabilitation of connecting roads in the Suai/Kamanasa area.

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I. Vantajen husi Delimitasaun Fronteira Maritima ba Kampu Greater Sunrise

Impaktu husi Tratadu 6 Marsu 2018

- Halo Serteza ba nain no jurisdisaun ba Rekursus sira iha Tasi Timor – Estimula Investimentu, tamba iha Sertezas.
- Kampu Greater Sunrise “tama” ~70% iha area Fronteira Maritima Timor-Leste nian;
- Fahe Rendimentu Upstream 70% ba Timor-Leste no 30% ba Australia;
- Timor-Leste iha poder de kontrole, liu-husi Autoridade Nasional Petróleo, hanesan Autoridade únika ne’ebé regula aktvidades ‘upstream’ iha Greater Sunrise;
- Provisoens ba Konteúdu Lokal diak liu





II. Vantajen ba Timor-Leste, husi partisipasaun 56.56% iha **Upstream Greater Sunrise**

1. Ho maioria iha Joint Venture, Timor-Leste bele orienta ezelesaun projetu **tuir tempu no planu** (ho hanoin atu hahú *konstrusaun* iha 2021, atu hetan *produsaun* iha fins 2025).
2. Iha Direitu atu **veta**, se nesesariu, ba proposta actividades ka konseitu ruma ne'ebé mai husi Parseirus sira seluk iha Joint Venture (Woodside no Osaka Gas), karik la fo vantajen ba Timor;
3. Bele propoem ideas ho konseitus hodi diskute iha Joint Venture;
4. Sei orienta no deside *Konseitu Uniku* ba dezvoltimentu kampu Greater Sunrise ho **Pipeline/kadoras no Planta LNG** iha Timor-Leste;

....kontinua.....

.... Vantajen ba Timor-Leste, husi partisipasaun 56.56% iha Upstream Greater Sunrise

- Bele influensia diskusoens Joint Venture hodi bele halo programa '**local content**' **ne'ebé diak** ba Timor-Leste – nune'e bele loke kampu trabalhu barak, no kria bisnis ne'ebé relevante ba setor privadu Timoroan, hanesan fornimentu sasán, hahán, ekipamentus no konstrusaun facilidades balun ne'ebé Timoroan bele halo;
- Bele orienta modelu business ne'ebé fo vantajem ba investimentu TLNG (diskusaun ba **deside Tarifa/taxa de pagamentu** ba 'downstream').

III. Benefisius ne'ebé sei hetan husi Projetu Greater Sunrise

Benefisius bele mai husi :

- a) Benefisiu Finanseiru/monetariu (monetary benefits)
- b) Benefisiu Sosiu-ekonomiku (socio-economic benefits)
- c) Benefisiu Estratejiku (strategic benefits)

A) Benefisiu Finanseiru/monetariu:

UPSTREAM

- Timor-Leste sei iha amentu de rendimentu ba Estadu, tamba hetan partisipasaun iha Joint Venture ba 'Upstream', liu husi TIMOR GAP:

Antes de partisipasaun iha JV: US\$ 16 Billioens

DEPOIS de partisipasaun, ho 56.56% iha asoens :
US\$ 25 Billioens

Benefisius Finanseiru/monetariu:

DOWNSTREAM

- Timor-Leste iha amentu de rendimentu ba Estadu, tamba iha projetu Downstream iha Timor-Leste:

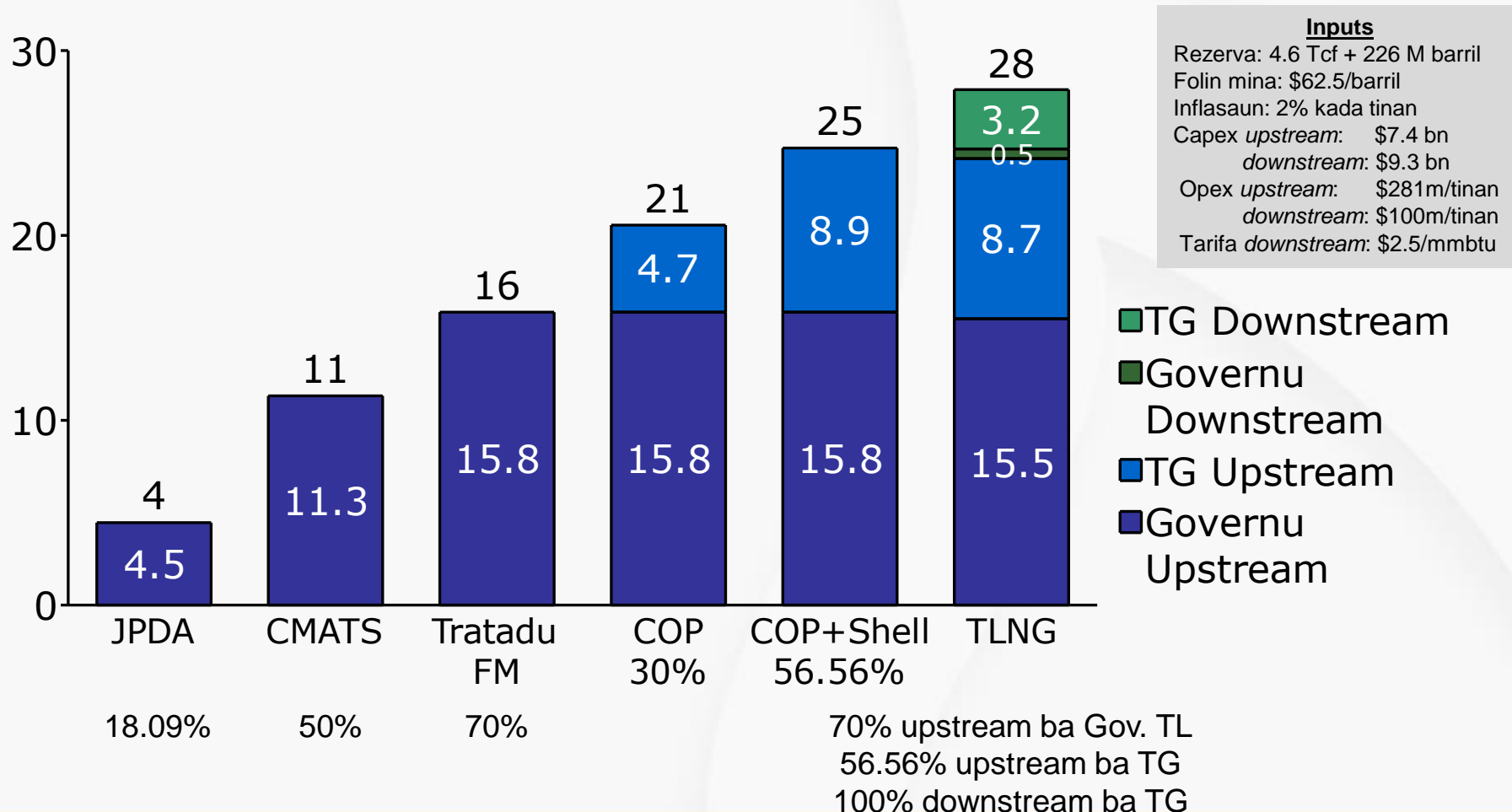
Downstream La mai Beasu – ita sei la hetan rendimentu : US\$ **0**

Ho Downstream iha ita nia rai, ho TLNG, bele hetan husi tarifas/impostus -
US\$ **3.2** Billioens

Greater Sunrise bele fó \$28 bilioens ba Timor-Leste

**SENARIU
KONSERVATIVU**

Valor finanseiru diretu husi Greater Sunrise ba Timor-Leste (lukru*, USD biliaun, nominal)

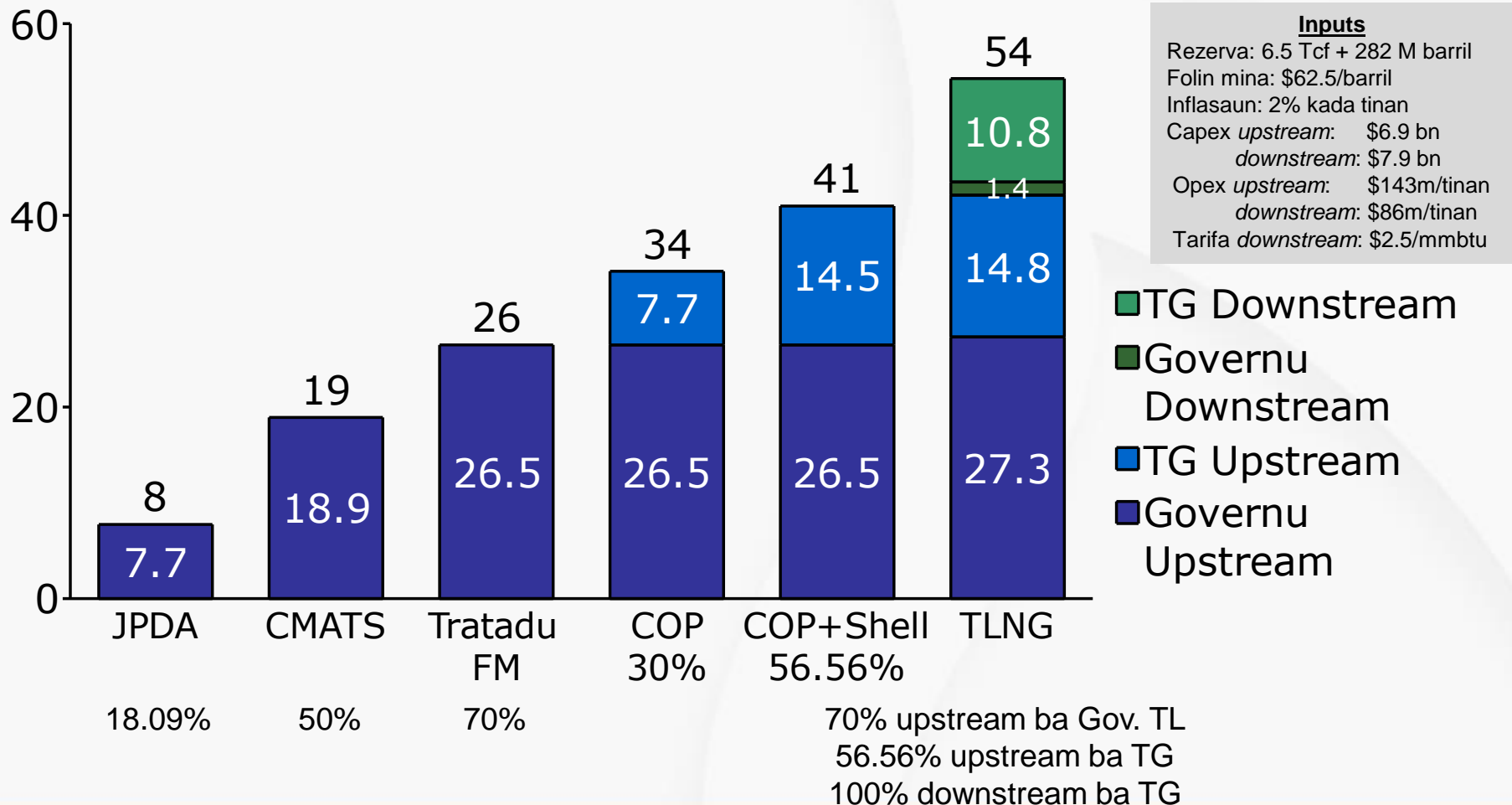


*Lukru = reseita minus kustu (durante projetu nia moris)
 Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

Senariu reserva ás liu, tuir TIMOR GAP nia kálkulu, Greater Sunrise bele fó \$54 bilioens ba Timor-Leste

**SENARIU
TIMOR GAP**

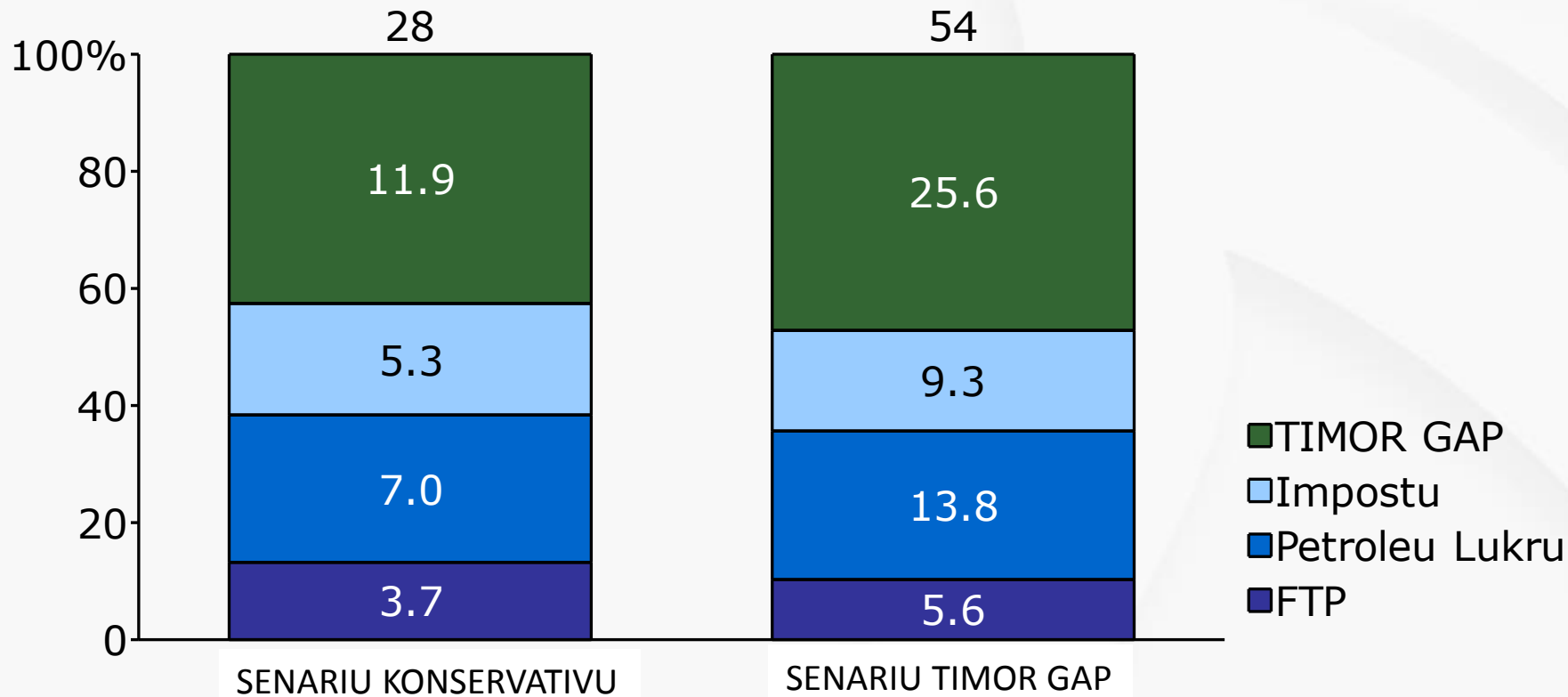
Valor finanseiru diretu husi Greater Sunrise ba Timor-Leste (lukru*, USD biliaun, nominal)



*Lukru = reseita menos kustu (durante projetu nia moris)
 Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

GS bele fó \$28-54 bilioens ba Timor-Leste

Valor finanseiru diretu husi Greater Sunrise ba Timor-Leste (lukru*, USD biliaun, nominal)

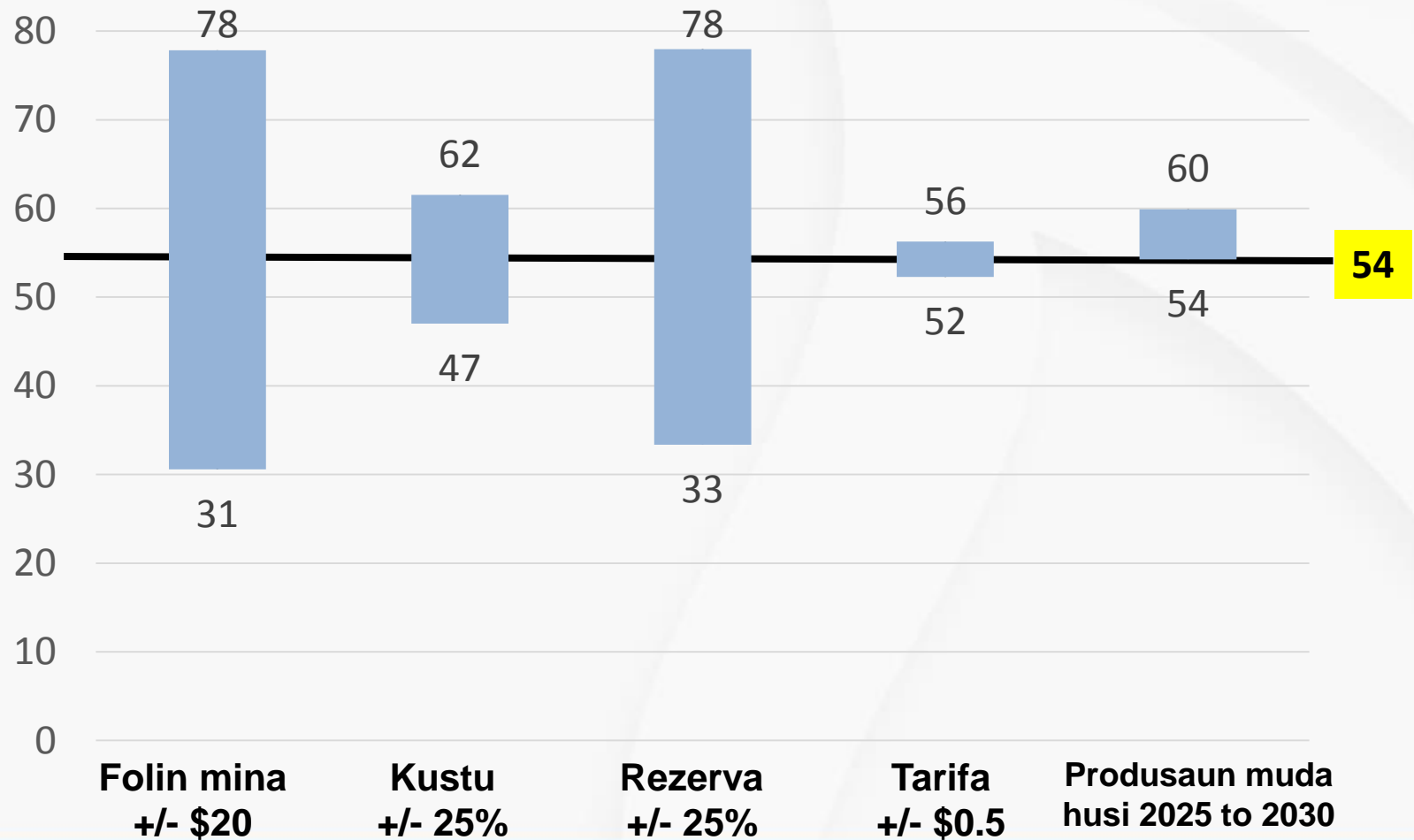


*Lukru = reseita minus kustu (durante projetu nia moris)
Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

Análize de sensibilidade: variáveis importantes

**SENARIU
TIMOR GAP**

Valor finanseiru diretu husi Greater Sunrise ba Timor-Leste (lukru*, USD biliaun, nominal)

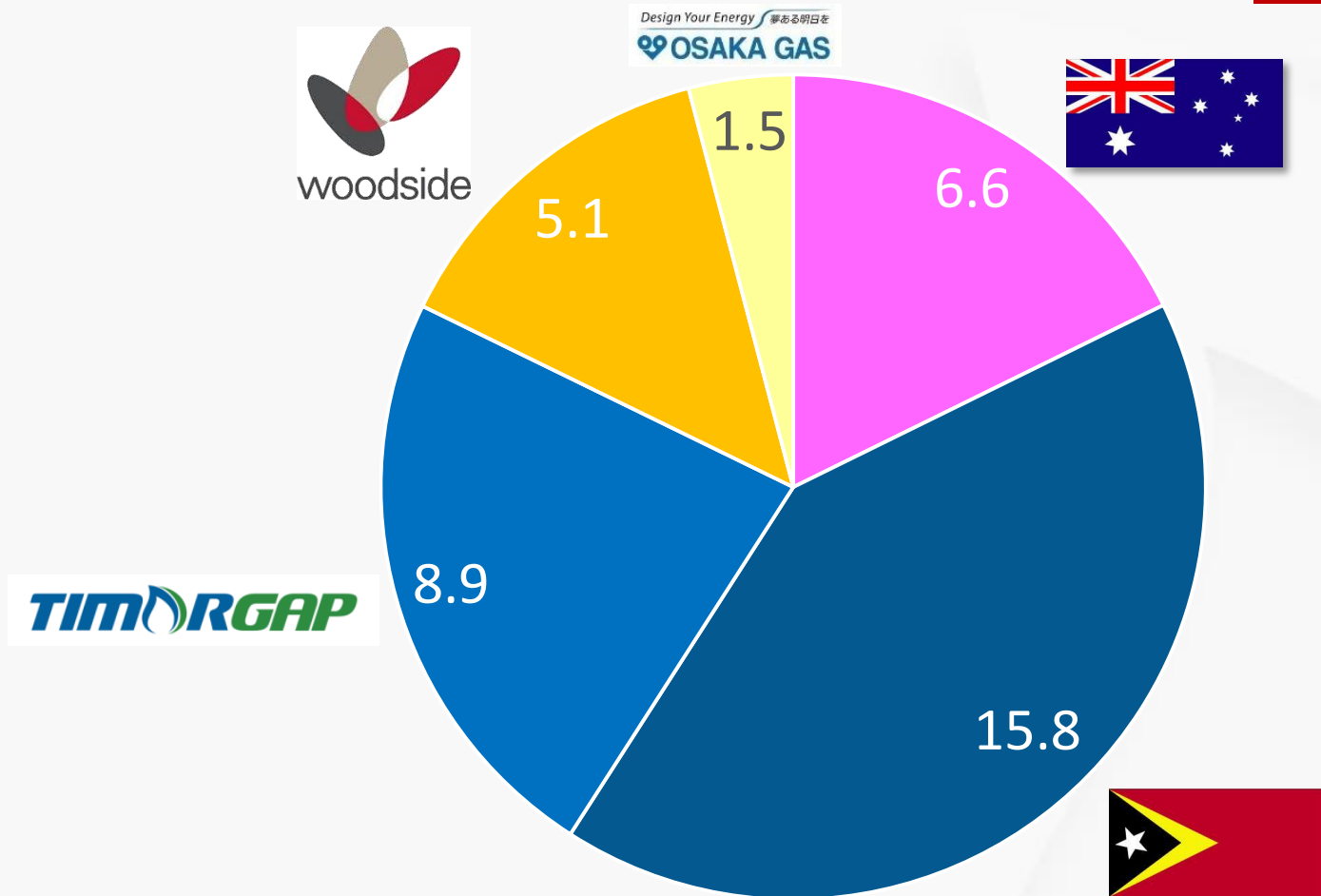


*Lukru = reseita minus kustu (durante projetu nia moris)
Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

Lukru husi upstream: \$37 bilioens ba Governu + Kompanhias

SENARIU
KONSERVATIVU

**TOTAL:
\$37
BILIOENS**



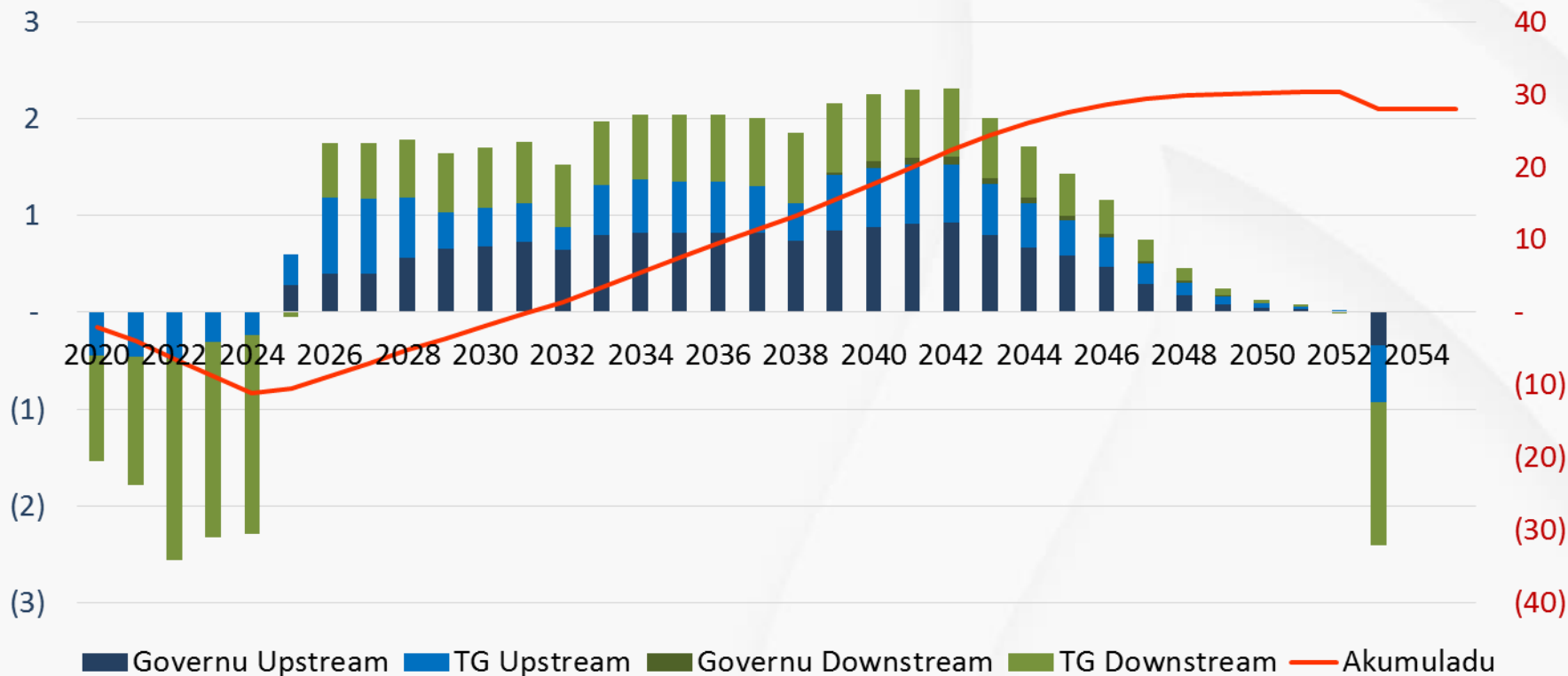
*Lukru = reseita menos kustu (durante projetu nia moris)
Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

GS bele fó ~\$2 biloens/tinan ba Timor-Leste

**SENARIU
KONSERVATIVU**

Lukru* ba Timor-Leste (USD biloens, nominal)

Akumuladu (USD biloens)



*Lukru = reseita minus kustu (durante projetu nia moris)
 Fonte: Modelu ekonomiku TIMOR GAP ba Greater Sunrise

B) Benefisius Sossiu-ekonomikus:

1. UPSTREAM

- a) Orsamentu ka Kustus ba Explorasaun, Dezenvolvimentu/Instalasoens, Operasoens no Manutensaun, ne'ebé sei lubuk ida ~ 15 US\$ Bilioens sei gasta iha Timor-Leste, hodi fo benefisiu **ba ekonomia Timor-Leste;**
- b) Kria oportunidade servisu ka emprego direto no indireto no atividades derivadas (ratiu 1:5) – **Bele fó kampu-de-trabalho barak ba Timoroan sira;**
- c) Ajuda kria atividades ekonomia, liu-husi kria bisnis oi-oin ba setor privadu no populasaun em jeral, liu husi forneseimentu hahán, modo, na'an ho selu-seluk tan ba plataformas ka 'upstream'- **kria atividades ekonomia ba bisnis Timoroan sira;**
- d) Kria infrastruktuuras boot (hanesan Supply Base, Aeroportu no Estrada) nebe'e iha efeito multiplikativu no multisetoral ba ekonomia nasaun, no selu-seluk tan - **kria infrastruktuura iha Timor-Leste tamba buat barak sei hala'o iha Timor-Leste;**

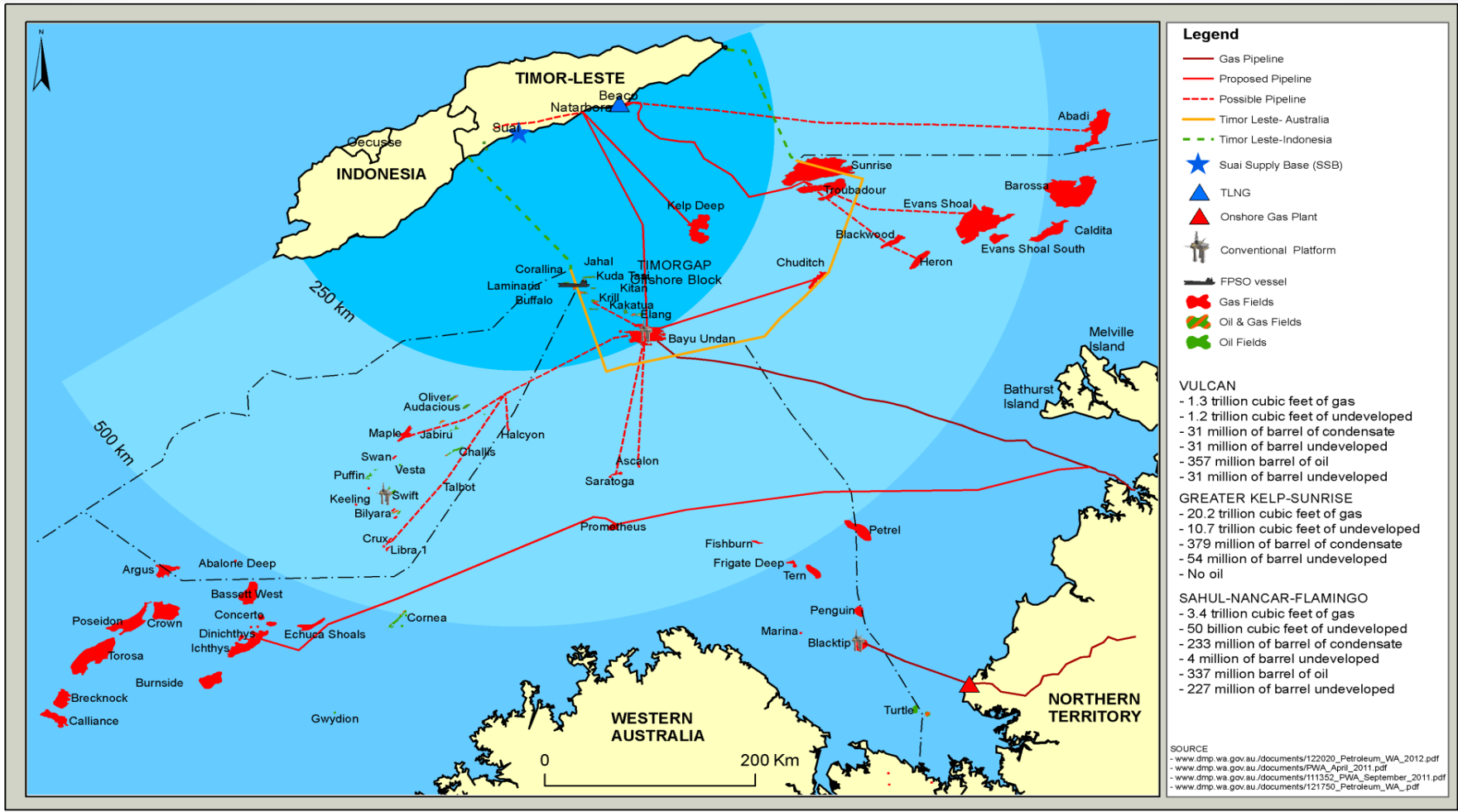
2. DOWNSTREAM

- a) Orsamentu ka Kustus ba Instalasaun Pipeline, Fabrika/Refinaria/LNG no Fasilidades Marinas, Operasoens no Manutensaun ne'ebé sei lubuk ida - US\$ 7.9 bilioens **capex** + US\$2.4 billioens **opex** – **Husi montante ne'e, persentajem balun sei gasta iha Timor-Leste, ne'ebé sei kontribui ba ekonomia Timor nian;**
- b) Kria oportunidade servisu ka emprego direto no indireto no atividades derivadas (rasiu 1:5) – **Bele fó kampu-de-trabalho barak ba Timoroan sira;**
- c) Ajuda kria atividades ekonomia, liu-husi kria bisnis oi-oin ba setor privadu no populasaun em jeral, liu husi forneseimentu hahán, modo, na'an ho selu-seluk tan ba planta ka fabrika nomos ba ema sira ne'ebe hela iha 'Cidade foun', hodi fo apoiu ba industria ne'e;
- d) Kria infraestruturas boot (hanesan Fasilidade Marina) ne'ebé iha efeitou multiplikativu no multisetoral ba ekonomia nasaun, no selu-seluk tan.

C) Benefisius Estratéjikus:

1. Dezenvolve Greater Sunrise, liu-husi TLNG, bele sai hanesan **projetu pioneiru** ba projetus gas sira seluk iha Tasi laran no iha Rai laran;
2. Investimentu boot iha Downstream (US\$ 7.9 bilioens) bele torna Timor-Leste sai hanesan paiz ne'ebé fó konfiansa ba investimentus sira seluk iha futuru;
3. Planta LNG iha Timor-Leste bele permite hatán ba nesesidades nasionais (hanesan, eletrisidade no fertilizantes) no possibilidade atu exporta 5% gas liu-husi kadoras/pipeline rai-maran ba Indonesia (Timor Oeste) – hodi kontribui ba Timor-Leste sai nasaun exportadora gas, ne'ebé bele iha influencia geopolitika.

Potensia boot kona-ba gas iha Tasi Timor sei aproveita infrastrukuras iha Timor-Leste hodi dezenvolve iha futuro



IV. Preparasaun ne'ebé halao tiha ona: Estudus de Viabilidade



**FABRIKA
LNG**



**KADORAS
HUSI
SUNRISE**

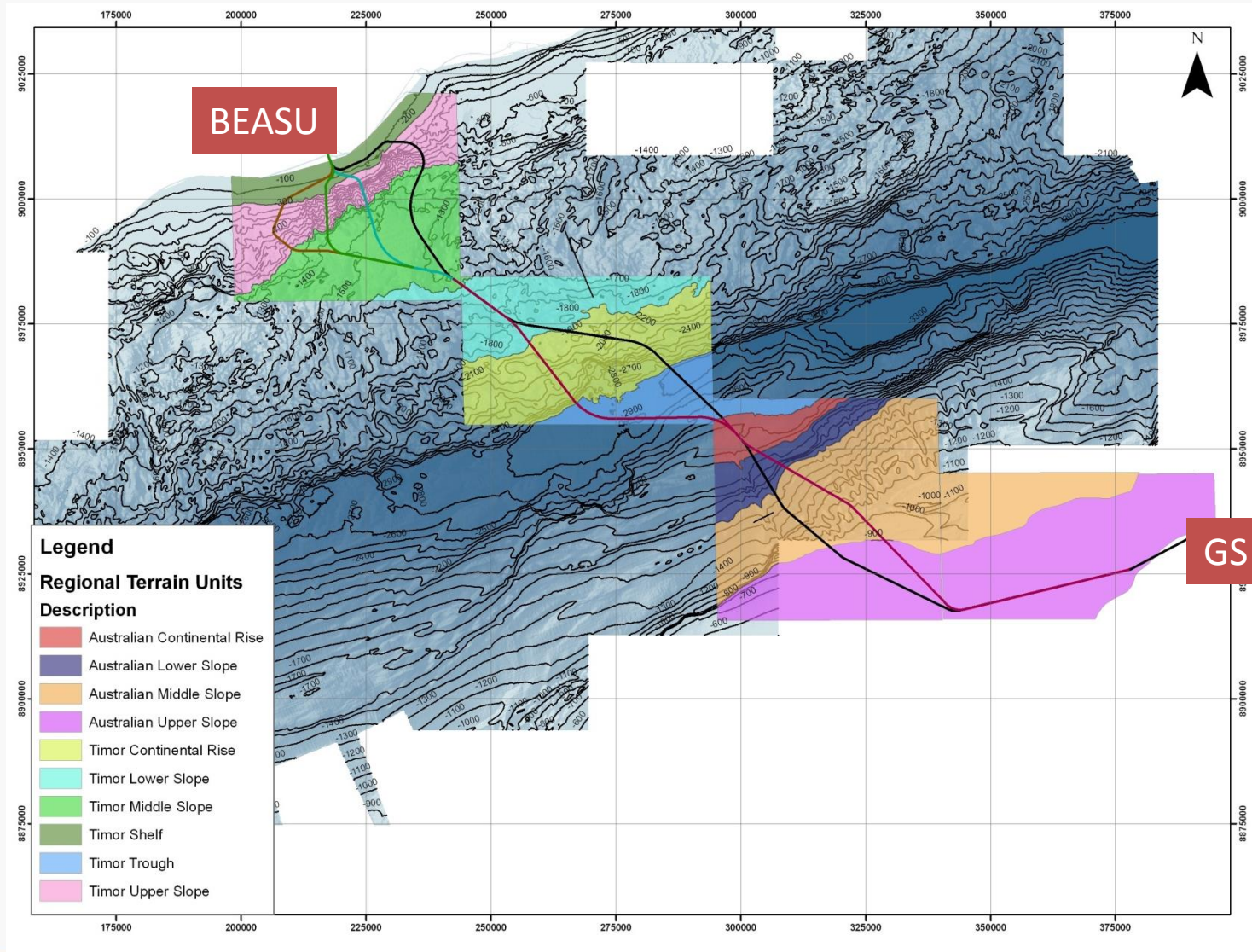
**FASILIDADE
MARINA**

**Viabilidade
teknika dada
kadoras husi
Greater Sunrise
to'o Beação**

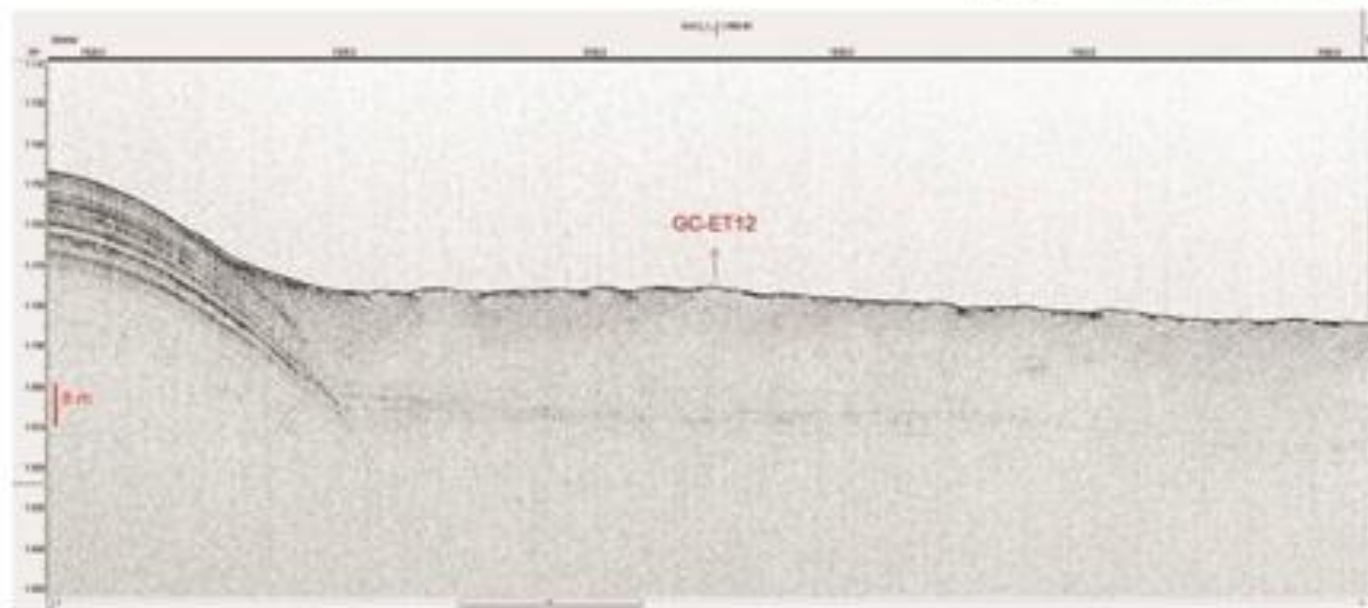
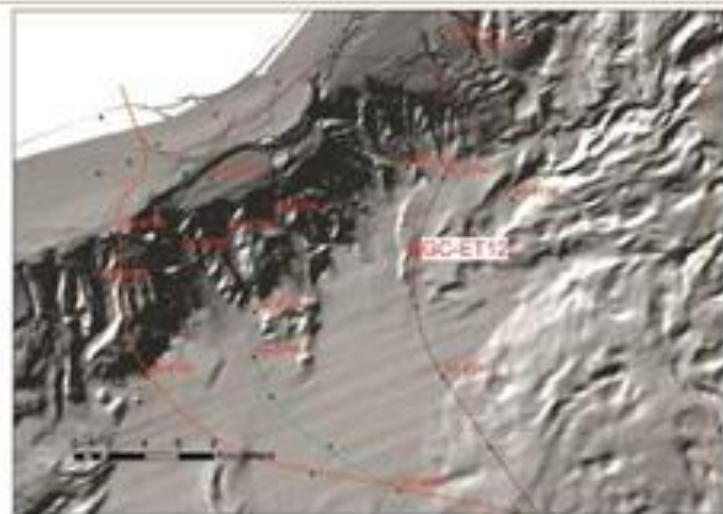
Questões técnicas principais:

1. Serake Pipeline/Kadoras ne'e bele mai Timor se Tasi Timor Klean lós – liu 3000 metrus?
2. Tasi-okos nia rai bele monu hatohar kadoras kuandu rai nakdoko?
3. Iha ka lae teknolojia atu fabrika pipeline ba mar profunda?
4. Iha ka lae Roahi-Instalador ba pipeline mar profunda?

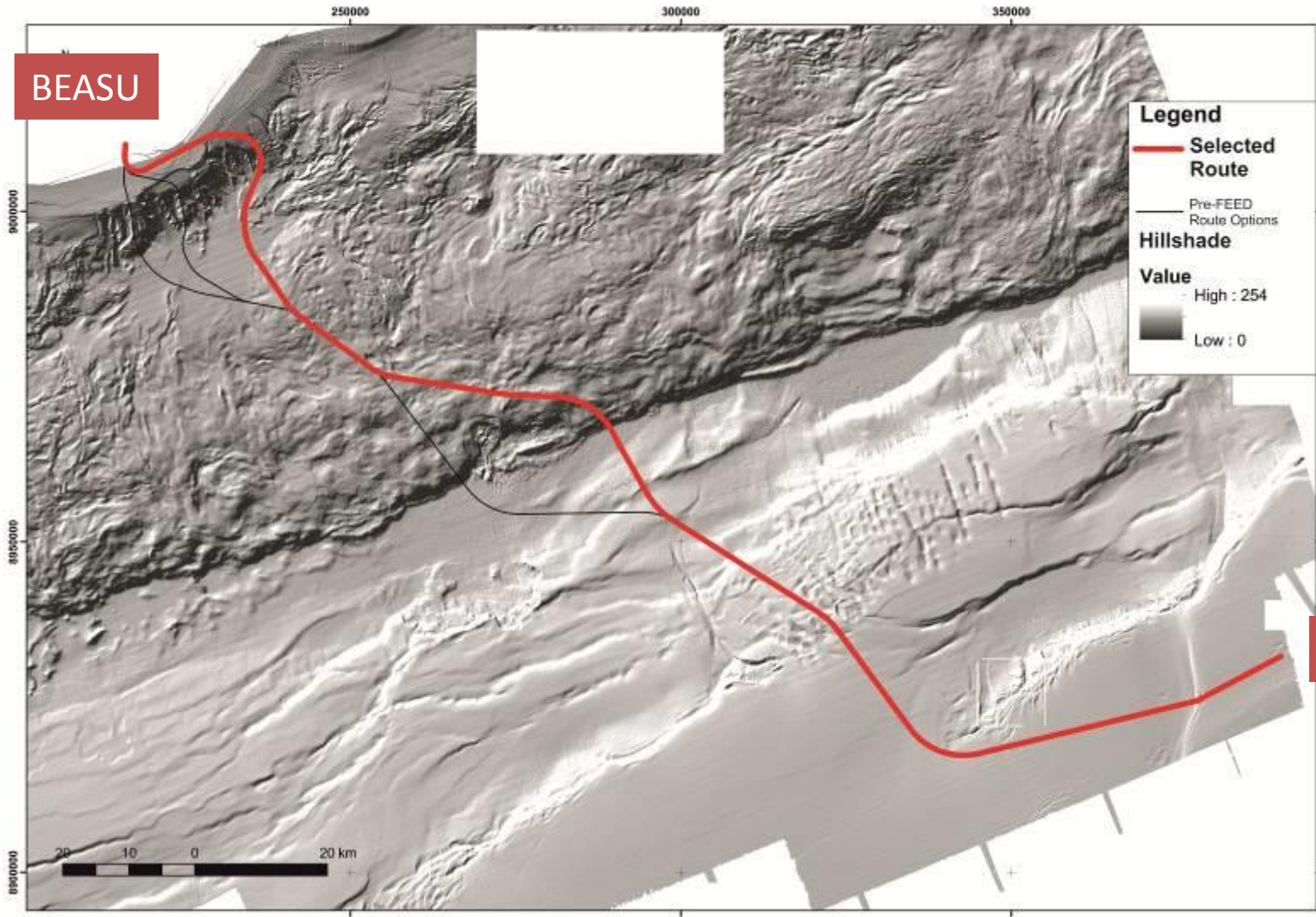
Surveys – Bathymetria 2008 no Detail Marine Survei: (AUV, Sampling, nsst.)



GC-ET12 (TUS Alt 2 Route)



BEASU



GS

Kadoras deepwater



Profundidade maxima (metru)

500
1,000
1,500
2,000
2,500
3,000

pipeline	Cascade and Chinook	Perdido Norte	Independence Trail	Rota 3
depth	2740	2530	2420	2300
length	120	289	214	296
diameter	9	18	24	24
installed	2009	2008	2006	2017



- km Instalasaun Allseas
- km Instalasaun Saipem
- 2018 Tinan instalasaun
- 24 Diametru kadoras (polegada)

Komprimentu (km)

Estudu tekniku hala'ó tuir 'best oil field practice' no KLEUR ONA (Hahú kedas iha 2008):

- Hala'ó tuir padroens internasionais ne'ebé ás, no uja kompanias/konsultores enjenharias ne'ebe diak tebes iha mundu – Mezmu kompanhia sira hanesan Woodside, ConocoPhillips, Shell no Exxon-Mobil normalmente tenki uza sira ba halo dezenu no kalkulu enjenharia sira.

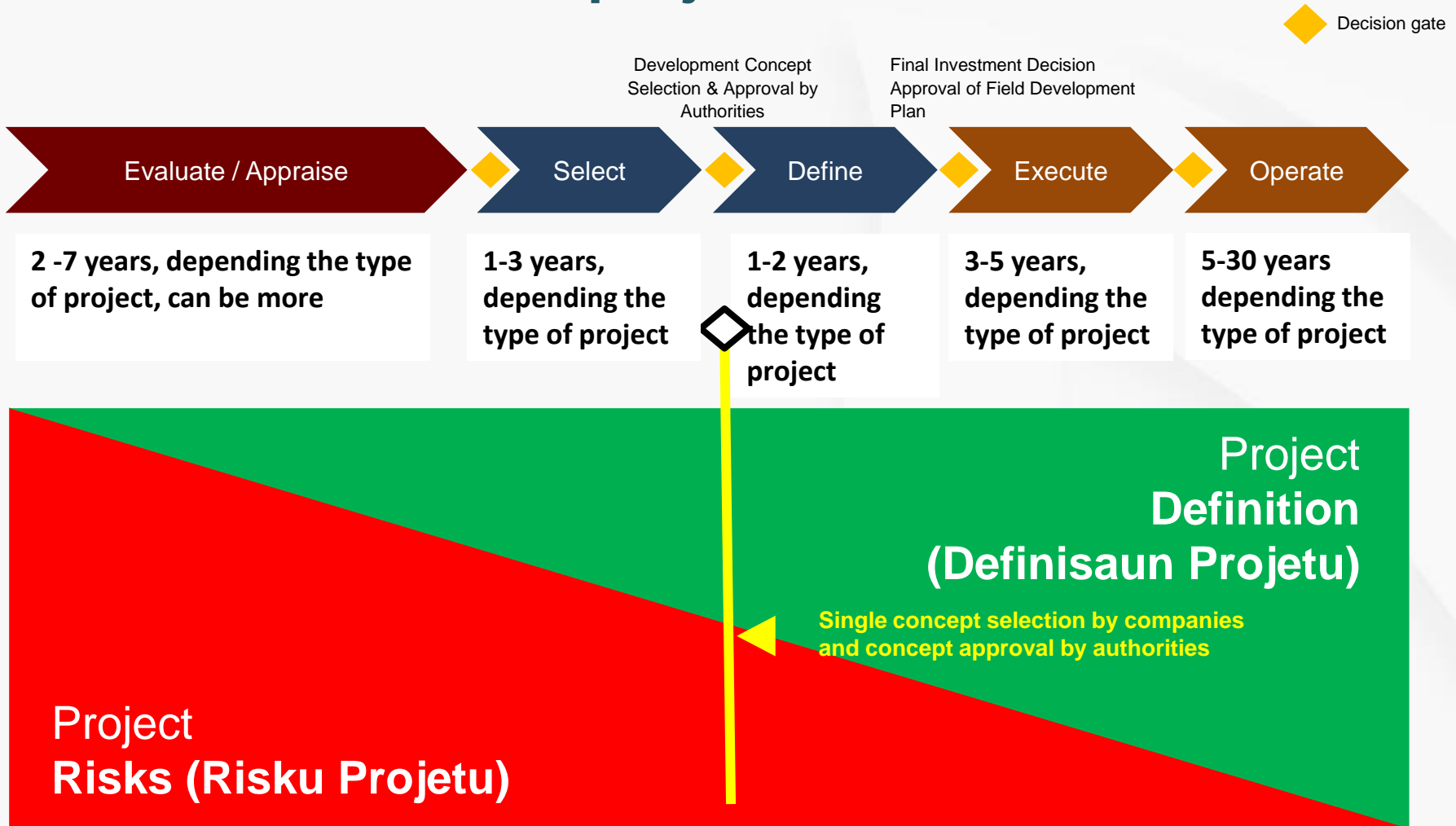
Exemplu konsultores espesializadus, mak tuir mai:

- *JP Kenny, Worley Parson, HR Wellingford, DNV, Forster Wheeler, Woodgroup, no selu-seluk tan*

Kompanhias/Konsultan Enjinheria Reputavel Internasionais:



'Stage Gate Approach': Hanesan dalam ida atu minimiza riskus iha projetu boot



Estudu tekniku ba:

1. Kadoras

2008-09 Pre-Feasibility Study

- Ho Petronas Malaysia
- Hatudu viabilidade inisial no identifika Beasu hanesan situu apropriadu ba pipeline

2010 Feasibility Study

- Teknikamente no finanseiramente viavel
- Opsaun ba rota/diresaun kadoras/pipeline identifikadu

2012 Pre-FEED (Pre- Front End Engineering Design = Pre-Dezenhu Tekniku/Enjenharia Detalhadu)

- Teknikamente no finanseiramente viavel
- Hadia no optimiza rota/diresaun kadoras/pipeline liu husi Detailed Marine Survey

2012 Detailed Marine Survey (DMS)

- Define +/- 250 corridor using AUV
(bathymetric data: 1m x 1m resolutions)
- Optimiza utilizasaun investigasoens DMS atu suporta FEED
- (Seismic, geotechnical/cores, age dating, geohazard, etc.)

2012-13 Front End Engineering Design ('FEED' = Dezenhu Tekniku/Enjenharia Detalhadu)

- Teknikamente no finanseiramente viavel (konfirmadu)
- Selesiona ona rota/diresaun pipeline ida deit, bazeia ba data DMS
- Konfirma kapabilidade fabrika pipeline/kadoras
- Konfirma katak iha ona kontraktor atu monta pipeline/kadoras ne'e (S-Lay & J-Lay)

Estudu tekniku ba:

2.Fasilidade Marina

2010 Feasibility Study

- High level Metocean survei (meteorological & oceanographic) – Definisaun estudus Metocean ne'ebé nesesariu iha Beaçó
- Estuda ona no konsidera ona opsoens oi-oin konaba “harbour layouts”

2011-12

Pre-FEED

- Atividades survei Jeoteknika no Jeofisika – ba Fasilidade Marina no Planta LNG
- Kriteirus Metocean aktualizadus no karaterizasaun ba situu/fatin iha Beaçó
- Simulasaun Navigasaun (NavSim) ba Dezenhu Tekniku
- Opsaun rua selesionadu – “Coastal Harbour & Onshore Basin”
- Estimasaun Kustu (CAPEX estimates) bele sai +/- 25% (Pre-FEED level)

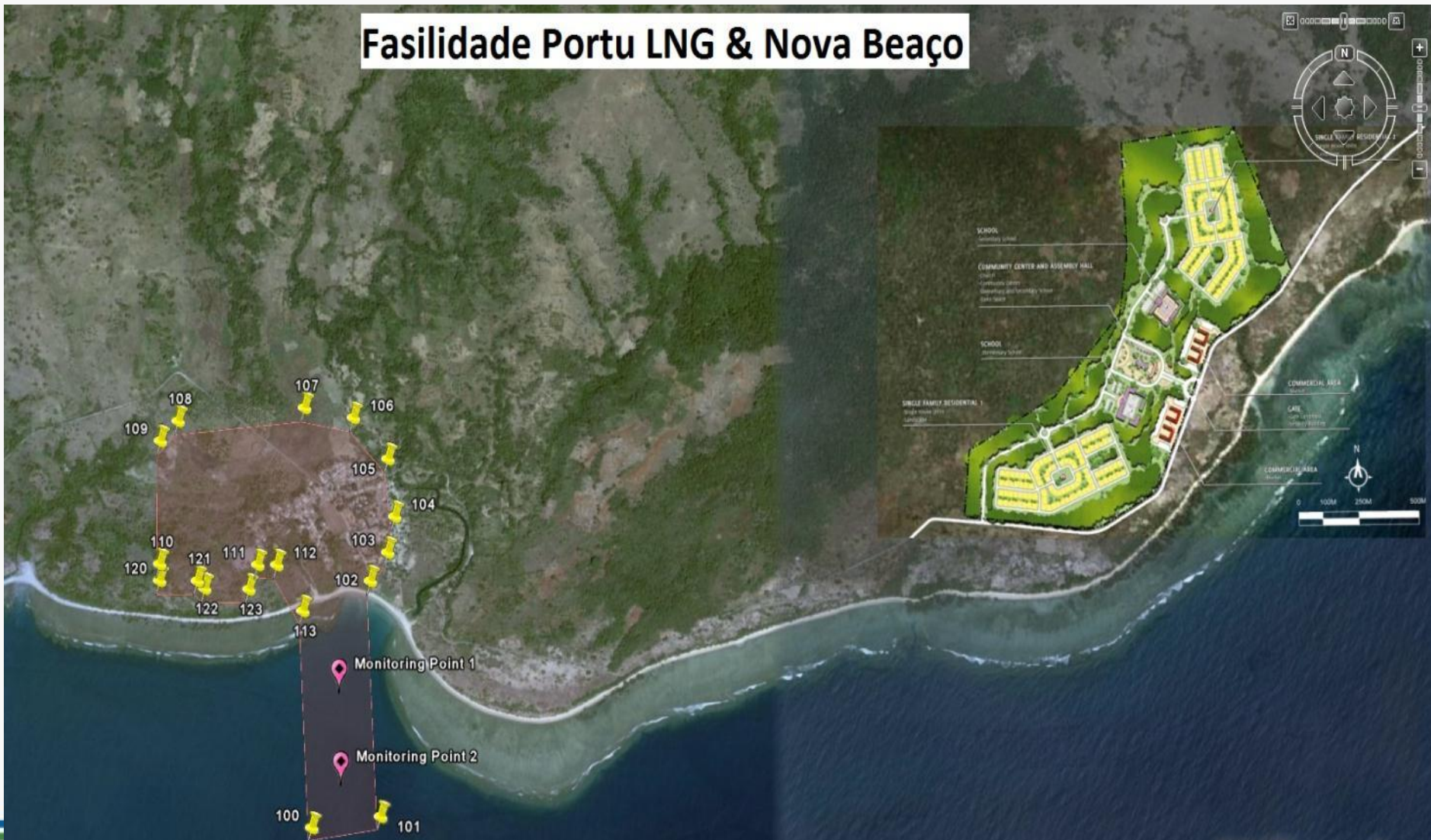
2012-13

Front End Engineering Design (FEED)

- Opsaun preferensia mak Onshore Basin (bazeia ba dadus geoteknikus)
- ‘Physical modelling for Onshore Basin’ hari’i iha Laboratoriu HR Wellingford iha UK
- Estimasaun Kustu (CAPEX estimates) bele sai +/- 10-15% (FEED level)
- Survei ba sedimentasaun – hodi determina manutensaun ba ‘dredging’ (OPEX)

FASILIDADE MARINA LNG Beaco & Nova Beaco

Fasilidade Portu LNG & Nova Beação



Estudu tekniku ba:

3. Plant/fabrika LNG

2008 Pre-Feasibility Study

- Beaço – mak sitiu ida apropiadu ba Planta LNG
- Estudus high level kona-ba kustu no impaktu sosiu-ekonomiku

2009-10 Conceptual Study

- Determina kapasidade Planta : 5 MTPA (1 train)
- Iha possibilidades expansaun ba to'o ~20 MTPA (3 trains)

Estudu konaba:

- Selesaun Teknolojia (ezemplu: APCI C3MR)
- Estimasaun Kustu (CAPEX)
- Impaktu sosiu-ekonomiku no selu-seluk tan

2015-16 Pre-FEED

- Hadia liu tan no atualiza Estudu Konseptual
- Define diak liu tan Planta nia dezenhu no prosesu (P&IDs, etc.)
- Hadia estimasaun CAPEX ba +/- 25% (Pre-FEED level)

Viabilidade Komersial no impaktu ekonomiku husi Greater Sunrise (TLNG)

Estudus viabilidades komersial husi projetu Greater Sunrise ho Tasi Mane no nia impaktu ekonomiku

ECONOMIC IMPACT OF GREATER SUNRISE:

IMPACTS OF THE DEVELOPMENT AND OPERATION OF THE GREATER SUNRISE GAS FIELD TO THE TIMOR-LESTE ECONOMY



ACIL ALLEN CONSULTING PTY LTD
 ADV 68 102 862 148
 LEVEL NINE
 80 COLLINS STREET
 MELBOURNE VIC 3000
 AUSTRALIA
 T491 5 860 8000
 F491 5 868 880
 LEVEL ONE
 90 PITT STREET
 SYDNEY NSW 2000
 AUSTRALIA
 T491 2 872 510
 F491 2 864 945

FIGURE 2.1 PROJECTED PRODUCTION AND REVENUES BY PROJECT ELEMENT (BOTH CASES)



Production and revenues are projected to be the same under both cases, there are differences in the Timorese local content as well as the gross returns to Timor-Leste.

• In the period 2020 to 2048, under Case 1:
 • Capital expenditure over the forecast period is US\$11 billion with Timor-Leste's share of total expenditure estimated to be US\$1.1 billion (approximately 10 per cent).
 • Operating expenditures over the forecast period is US\$11.4 billion with Timor-Leste's share of total expenditure estimated to be US\$6.8 billion (approximately 60 per cent).
 • Net cash flow to Timor-Leste Government (and through TIMOR GAP, E.P.) is projected to be US\$7.7 billion in real 2016 terms.

• Approximately 16,400 FTE direct jobs for Timor-Leste residents are estimated to be created from 2020 to 2048:
 • Capital expenditure is estimated to be US\$765 million (with the difference between the LNG facility being located in Australia).
 • Operating expenditures is estimated to be US\$2.5 billion.
 • Net cash flow to the Government (or through TIMOR GAP, E.P.) is projected to be US\$2.5 billion in real 2016 terms. In line with the lower equity ownership, net cash flows during the construction period are lower compared to Case 1 but net inflows during the operation phase are also lower.

Approximately 16,400 FTE direct jobs for Timor-Leste residents are estimated to be created from 2020 to 2048, those estimated under Case 1, and is principally due to the LNG facility being located in Timor-Leste, thereby giving negligible opportunities for Timorese citizens to be engaged in stream construction or operations.

As the projected revenue components that accrue to the Timor-Leste Government, including the net dividends payable to TIMOR GAP, E.P. Under Case 1, US\$35.5 billion through taxes and royalties over the life of the project with a further US\$13.7 billion through TIMOR GAP, E.P. (total equals US\$49.2 billion). Under Case 2, the Timor-Leste Government is projected to accrue US\$22.0 billion through taxes and royalties with a further US\$6.7 billion through TIMOR GAP, E.P. (total equals US\$28.7 billion).

TIMOR-LESTE GOVERNMENT REVENUES COMPONENTS (NOMINAL TERMS)

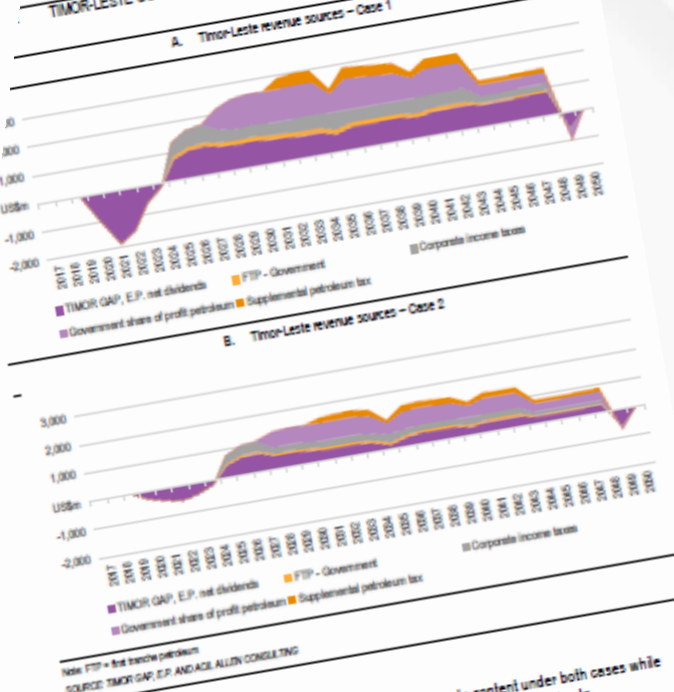


Figure 2.3 presents the projected year on year local Timor-Leste content under both cases while Figure 2.4 presents the annual direct employment and net cash flow for Timor-Leste.

Impaktu ekonomiku de TLNG ba Timor-Leste: **Acil Allen nia estudu**

Konkluzoens:

- Total rendimentu husi dezenvolvimentu kampu Greater Sunrise (inklui produsaun LNG) mak : US\$92.4 bilioens (US\$58.4 bilioens, iha termus reais 2016 nian);
- Osan ne'ebé tama ba Governu TL (inklui TIMOR GAP, E.P.), ho projesaun ba US\$29.7 bilioens iha termus reais 2016 nian).
- Aproximadamente 38,000 kampus de trabalhu sei kria ba Timoroan.

**Vizitas no diskusoens
oi-oin atu konfirma
viabilidade projetu ne'e**

Xefe Negosiador, Sr. Kay Rala Xanana Gusmao nia vizita no diskusaun konabá operasaun Planta LNG iha Bontang – Kalimantan, Indonesia



Xefe Negosiador, Sr. Kay Rala Xanana Gusmao observa modelu plant LNG no hasoru malu ho estudantes iha sentru treinamentu iha plant LNG ne'e rasik.



Xefe Negosiador, Sr. Kay Rala Xanana Gusmao nia vizita ba Europipe –
Alemanha/Jerman hodi'i konfirma ezistensia fabrika kadoras/pipeline ba tasi
klean/'ultradeepwater pipeline'



Xefe Negosiador, Sr. Kay Rala Xanana Gusmao nia vizita ba Allseas – Delf, Holanda hodi konfirma ezistensia kapasidades instalasaun kadoras/pipeline ba tasi klean/'ultradeepwater pipeline'

Asinatura MoU atu ALLSEAS halo InstalasaunKonsidera: EPC + Finance



Akseas

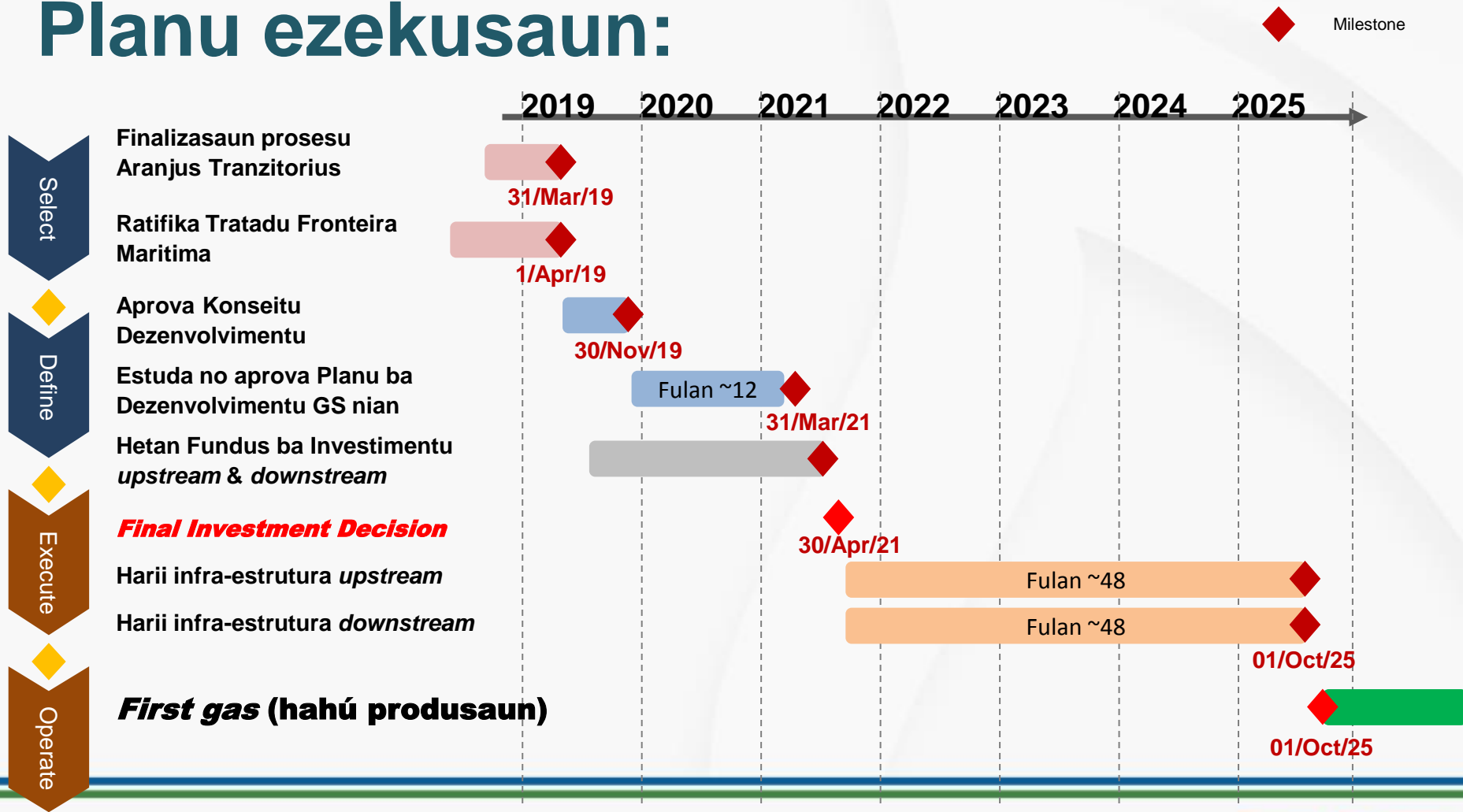


Teknolojia Allseas

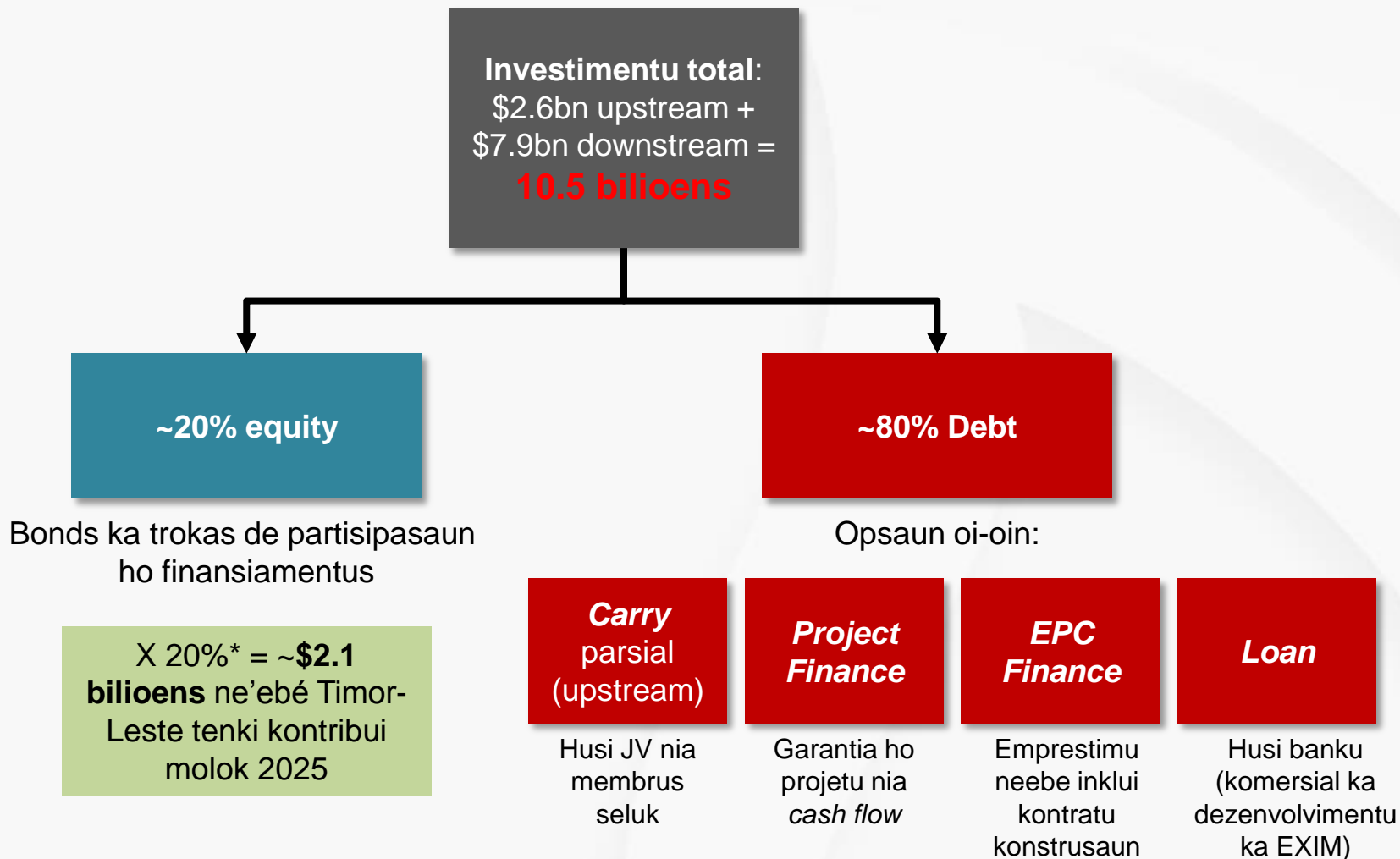


5. Planu Ezekusaun no Estratéjia finansiamentu

Planu ezelesaun:



Investimentu: Estratéjia no modelu finansiamentu



*Konsidera katak finansidor espera katak projetu nia nain/sponsor participa ho investimentu 20% ba leten

Estratéjia atu asegura kbit iha ezekusaun

Parseria ho empresas ne'ebé kompetentes

Kompanhias Operadoras

Ezemplu:



Hasa'e Timoroan nia kapasidade

- Liu husi treinamentu
- Secondments/on-the-job training
- Programas bolsas-de-estudu
- Komesa haruka Timoroan (inklui Beasu oan ba treinamentu durante tinan rua iha PT Badak : - alvu 250 pesoas iha tinan 5 nia laran);
- Koordena ho Sentrus –de- Treinamentu hodi prepara trabalhadores ba konstrusaun (liu 10.000 pesoas)

Rekruta talentu

- Rekruta Timoroan sira ho talentu, inklui mos peritus internasionais (ba pozisoens ne'ebé seidak bele preenxe husi Timoroan sira) ba tinan 5 hanesan ne'e.



Obrigado Wa'in