The Resource Curse in Timor-Leste[1]

By Charles Scheiner[2], 23 August 2022

Abstract

After restoring independence in 2002, Timor-Leste established a rigorous system to manage oil and gas revenues and activities, based on international best practice. Policymakers hoped that it would protect the small nation from the 'resource curse' which afflicts countries that depend on exporting non-renewable wealth. Within five years, petroleum exports were financing 85% of the state budget and comprised 75% of GDP. By 2022, with its known oil and gas reserves nearly depleted, Timor-Leste has made little progress in diversifying into a sustainable economy. This paper will explore what happened and try to explain why well-intentioned legal and structural measures are not sufficient to avert the 'paradox of plenty.'

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[1] An earlier version of this paper was published in Spanish in *Estudios de Asia y África* (Scheiner 2022b), and a draft was presented at the 2022 Conference of the Association for Asian Studies (Scheiner 2022a).

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Introduction

This paper explores the impacts of oil and gas dependency on the sovereign Democratic Republic of Timor-Leste. Soon after Timor-Leste restored its independence in 2002, the new nation established a strict legal system to manage oil and gas activities and revenues. Building on international best practice and informed by the experiences of other countries, the nation hoped to avoid the resource curse that afflicts many nations which depend on resource extraction. This "paradox of plenty" often causes people in countries with large nonrenewable resource reserves to have lower quality of life than those in countries without such wealth. Although several dozen countries had larger oil and gas reserves than Timor-Leste, the small country had very little other economic activity and hoped to use the windfall of nonrenewable assets to move its development forward.

The resource curse, sometimes called "Dutch disease," has been described from various perspectives, including macroeconomic, human rights, conflict, political, governance, budgetary and psychological (Karl 1997; Collier 2010; Ross 2018; Humphreys et al 2007; Barma 2021). This paper does not try to deconstruct it analytically, but uses the term more broadly to include negative outcomes related to dependency on exporting nonrenewable resources. Rather than the academic approach to Timor-Leste taken by some researchers (John et al 2020; Lundahl and Sjöholm 2019), this paper draws mainly on primary sources and first-hand observations.

Policy-makers and civil society in Timor-Leste were aware of the resource curse early on. A 2004 government discussion paper called petroleum "the devil's excrement", noting that "many petroleum producing countries are associated with negative developments like: poverty…, conflict…, corruption and unrepresentative government" (Ministry of Planning and Finance 2004). One NGO responded that "Th[is] description of the curse … does not mention some of the worst manifestations of the 'devil's excrement.' Nearly all petroleum-revenue-dependent countries experience artificially high prices, substitution of imports for locally produced items, and neglect of non-oil sectors of the economy" (La'o Hamutuk 2004).

In 2005, as Timor-Leste was enacting its systems into law, money began to flow in from offshore oil and gas production. It peaked seven years later, and by the middle of 2022 had totaled US$24.4 billion – a large amount for a country with only 1.3 million citizens and a $1.6 billion annual non-oil GDP.

Timor-Leste did a lot of things right, but, as its producing oil and gas fields near depletion, it faces significant hurdles in its transition to a sustainable economy.

This paper looks at governance, contracting and revenue management during four phases of Timor-Leste's petroleum history: creation of regimes and commencement of oil extraction, rising revenues and expectations, decline from peak production, and today. In conclusion, it examines what has and hasn't worked, and some of the reasons why.

Starting in a good place

Timor-Leste created its petroleum management systems before its own large-scale oil and gas production began. Its citizens, having lived through centuries of colonialism and foreign military occupation, and a 24-year brutal war for independence, highly valued peace, sovereignty and their new constitutional democracy. Although, as explained below, the post-conflict, post-colonial, fragile context exacerbated some of the resource-dependency-related problems, people were determined to move forward.

Following two years of UN-run transitional administration, the country was blessed with international good will and advisors. The nation had no foreign debt and negligible local corruption. Known oil and gas reserves were far offshore, minimizing proximate impacts on communities and the environment.

In this promising context, Timor-Leste's First Constitutional Government, led by Prime Minister Mari Alkatiri, established what was expected to be a safe and durable petroleum and financial regulatory regime "for the benefit of current and future generations." It included the following by the end of 2005:

- The Petroleum Activities Law requires Production-Sharing Contracts (PSCs) with international oil companies to use a common template, with public tenders, published contracts, and no signature bonuses or other special fees which could create mechanisms for favoritism or corruption. Every project would have the same tax rules[3] (República Democrática de Timor-Leste 2005b; La'o Hamutuk 2005; La'o Hamutuk 2022b).

- The Petroleum Fund Law stipulates that all revenues received by Timor-Leste from oil and gas-related activities go directly into a sovereign wealth fund called the Petroleum Fund (PF), based on a Norwegian model. The PF is independently managed by the Central Bank and invests in hundreds of publicly-traded international stock and bonds. Withdrawals from the PF would fill the "non-oil fiscal deficit" in the state budget, and the PF was intended to stabilize expenditures, buffering state spending from fluctuating oil prices and production.

- Interest and dividends from Petroleum Fund investments are re-invested in the PF, and money can only be withdrawn with Parliamentary authorization. An Estimated Sustainable Income (ESI) rule limits withdrawals to 3% of the balance in the PF added to the inflation-adjusted value of anticipated future revenues from petroleum projects with approved development plans. This permanent income model was expected to be sustainable in perpetuity, although exceptional withdrawals of more than ESI are allowed if Parliament accepts the government's justification that they are in the long-term interests of Timor-Leste (República Democrática de Timor-Leste 2005a).

- As a further safeguard, the Petroleum Fund cannot be used as collateral for borrowing. Although international lenders encouraged borrowing to fill an anticipated "financial gap" because oil revenues would come in too slowly to pay for the state apparatus and economic development, the government declined to do so.

In 2003, the Prime Minister addressed the founding conference of the Extractive Industries Transparency Initiative (EITI) in London (Alkatiri 2003). The Petroleum Fund was then set up to be an international model of transparency, publishing regular reports on its income, outgo and investments (La'o Hamutuk 2022c; Banco Central de Timor-Leste 2022).

[3] Unfortunately, the contracts for the two largest fields, signed in 2003 to replace illegal occupation-era agreements, were not subject to these rules.

The government enacted local content rules in hopes that future jobs and subcontracts in the oil industry would help underpin Timor-Leste's economy, although realists did not expect this to be significant (La'o Hamutuk 2008).

For a few years, many things worked well.

Timor-Leste's oil and gas production and global energy prices surged after 2005, and the country's annual petroleum revenues were far higher than expected, exceeding $2 billion by 2008 and peaking at $3.3 billion in 2012, nearly three times non-oil GDP (see Figure 1).

In 2005-2006, independent Timor-Leste held its first licensing rounds for new oil and gas contracts, awarding six PSCs through transparent public tenders (La'o Hamutuk 2006a, 2006b).

Management of the Petroleum Fund followed the spirit and the letter of the established rules. Because the PF was entirely invested in bonds issued by foreign governments, it was the only sovereign wealth fund in the world which didn't lose value in the 2008 global financial crisis. PF managers avoided short-sighted investment decisions and maintained a diverse portfolio.

Because petroleum income exceeded expectations, the country did not need to borrow right away. The state began taking out loans in 2012, but foreign debt totaled less than $100 million at the end of 2017 (although loan agreements totaling $400 million had been signed).

In 2010, Timor-Leste was the third nation in the world to be certified as compliant with EITI, publishing annual reports (Timor-Leste Extractive Industries Transparency Initiative 2022). The National Petroleum Authority, Central Bank and Ministry of Finance regularly reported petroleum revenues and PF investments, setting up websites on procurement and budget execution. Revenue Watch compared 41 resource-rich countries on natural resource governance and Timor-Leste ranked 12th -- the best in Southeast Asia (Revenue Watch 2010, 16).

In 2011, Timor-Leste created a state-owned petroleum company, TimorGAP, E.P., to enable the government to participate in joint ventures and to sit on both sides of the negotiating table. Although it was less transparent and had a wider mandate than some had recommended, its scope and activities were limited (TimorGAP 2022; La'o Hamutuk 2007, 2022d).

Revenues and impatience increase

After civil unrest and a return to precarious stability, Timorese voters elected a new government in 2007. Led by Prime Minister Xanana Gusmão, it adopted an ambitious National Strategic Development Plan 2011-2030, which promised to use oil money to transform Timor-Leste into a moderate-to-high income country. However, the plan is aspirational, with no costing or details.

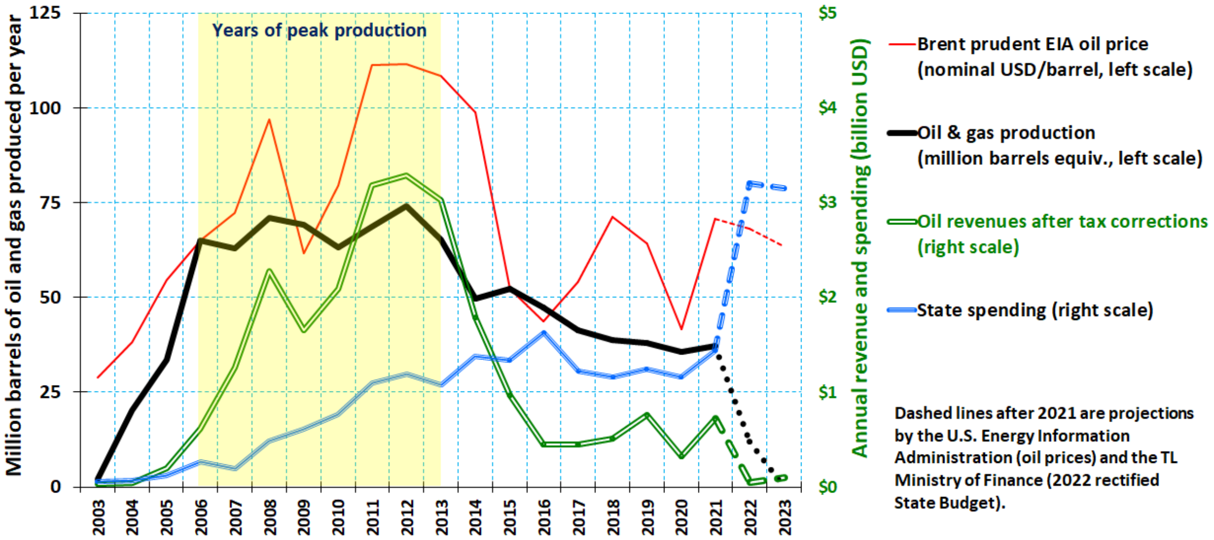
Oil companies did seismic research and drilled test wells in areas contracted in 2006, but by 2019 none of them had found commercially viable oil or gas, and all but one had been relinquished. No public bidding rounds for new exploration were held between 2006 and 2019.

From 2008 on, Government leaders gave less attention to governance and more to spending money. With annual oil and gas revenues exceeding a billion dollars, they thought the state budget was too low. Government spending escalated rapidly, from $0.3 billion/year in 2005-2007 to $1.1 billion/year in 2011-2013. Much of the money paid for physical infrastructure, especially national roads, power plants and transmission lines.

When Indonesia destroyed Timor-Leste's electricity system in 1999, they 'provided' an opportunity to build modern, renewable, decentralized electricity infrastructure with solar and wind power generated throughout the country. Instead, decision-makers opted for a 19th century design -- centralized, oil-fueled plants and a national grid – which cost more than twice as much to build as a renewable system would have, and reaches only ¾ of the population (La'o Hamutuk 2017). About $75 million of public money is spent to import fuel every year, opening avenues for legitimate and corrupt businesses (Tribunal da Recurso 2021b).

In addition, the government spent to "buy peace," paying generous pensions to veterans of the independence struggle and compensating people affected by the 2006 unrest. However, as Figure 1 shows, oil production declined after 2012 and revenues fell rapidly, although the state budget continued to increase for the next four years.

Figure 1: Petroleum prices, production, revenues and state expenditures



Sources: Autoridade Nacional do Petróleo e Minerais 2022a; U.S. Energy Information Administration 2022a, 2022b; Ministry of Finance 2022a.

Withdrawals from the Petroleum Fund paid for nearly all the escalating state spending, exceeding the Estimated Sustainable Income in every year except 2013, when $700 million in unspent withdrawals were carried over from the previous year. During 2010-2015, the state withdrew more than $6.1 billion from the PF, 54% more than the ESI, financing 89% of state expenditures. Although the government formally justified the unsustainable withdrawal levels, it did not explain why every year was exceptional.

Nevertheless, thanks to rising oil prices and favorable investment returns, the balance in the Petroleum Fund grew from $2 billion in 2007 to $17 billion in 2014. Oil revenues began to decline after 2012, although non-oil (domestic) revenues were still only enough to finance about 1/5 of the state budget (see Figure 3). Budget execution was often less than appropriations, and the PF-financed "surplus" was carried over from one year to the next.

As a small, inexperienced government with billions of dollars, Timor-Leste attracts con artists, although few multi-million-dollar corruption cases have come to light. In 2009 the fictitious Asian Champ Investment Company offered benefits to Timor-Leste in return for an investment of $1.2 billion from the PF. The Central Bank and the Investment Advisory Board realized that the offer was too good to be true, preventing the scam. Nevertheless, its main Timorese supporter remains in a key position, and its Malaysian principal recently signed an agreement to build a major tourist resort in Timor-Leste (La'o Hamutuk 2012; República Democrática de Timor-Leste 2021).

In 2009, Norway recruited Nigerian-American Bobby Boye as a petroleum tax advisor in Timor-Leste's Ministry of Finance, where he gained confidence by (falsely) accusing petroleum companies of cheating on their taxes. Boye then persuaded the Ministry to pay millions of dollars to his nonexistent law firm. Eventually, U.S. courts convicted Boye of fraud and imprisoned him for more than five years. His incorrect tax advice led to protracted negotiations, and Timor-Leste had to return more than $250 million to the companies (La'o Hamutuk 2021c, 2021d). The repayments were not done through the budget, but, less transparently, by deducting them from incoming oil and gas revenues.

In 2011, after extensive public consultation, the government persuaded Parliament to revise the Petroleum Fund law. They weakened the ESI spending guideline, sought higher returns by shifting investments from bonds to riskier equities, and allowed 10% of the PF to be used for collateral for loans. By 2014, 40% of the PF was invested in the volatile global stock market.

The current situation

Timor-Leste today is largely a peaceful, democratic country under rule of law. It has had four constitutional changes of government. No foreign powers have intervened militarily, and internal political conflicts are resolved through legal mechanisms. Democratic practice thrives, and people enjoy their civil and political rights. All identified cases of corruption have been under $20 million; many of the perpetrators have been tried and sentenced. Compared with the other fragile states in the g7+ group that Timor-Leste initiated, the country is doing exceptionally well.

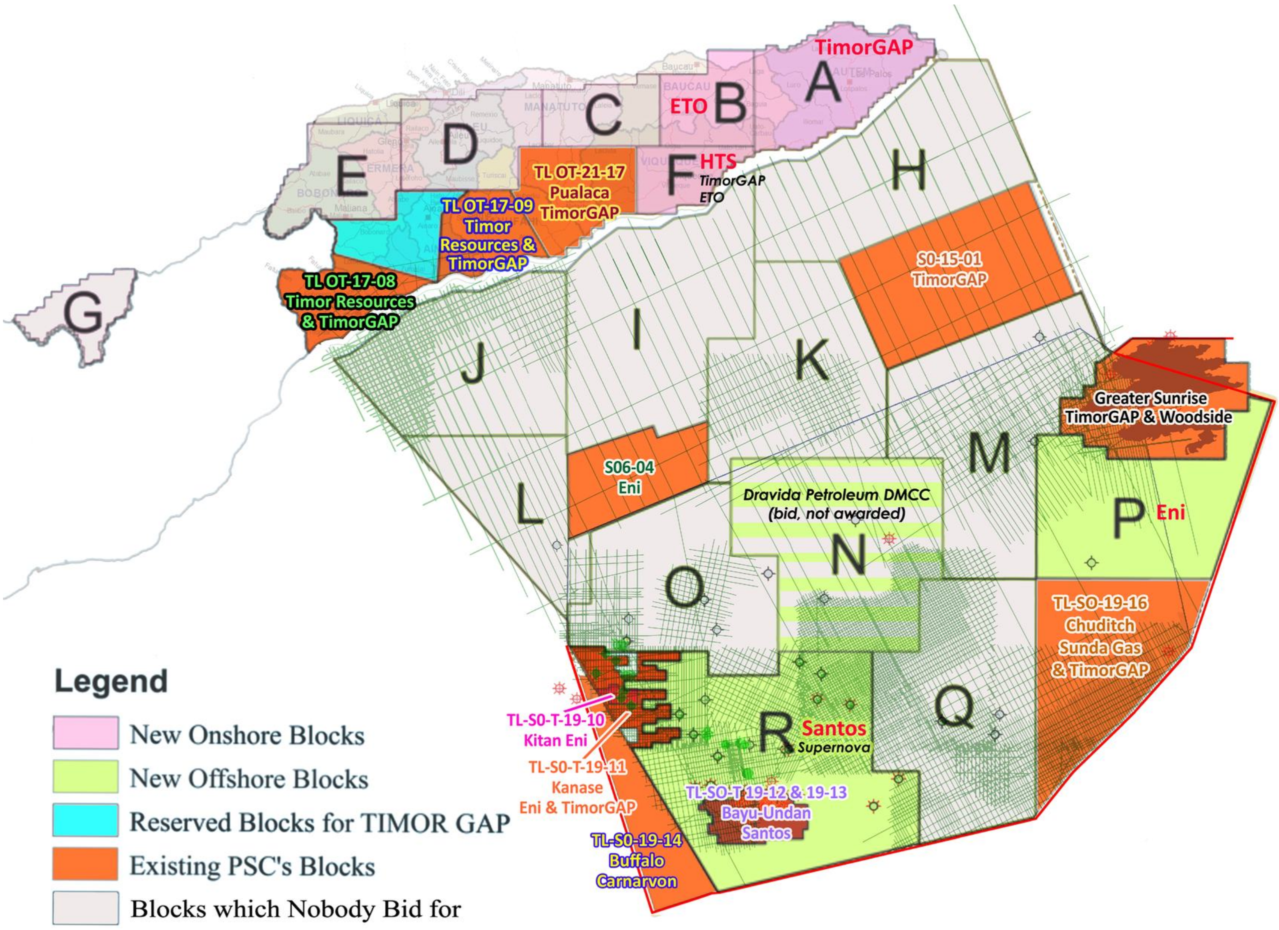
International governance scorecards rank Timor-Leste about average globally, albeit better than most other Southeast Asian or post-conflict countries. Some, such as the Corruption Perceptions Index, show slow but steady improvement (Transparency International 2022), while others, including Varieties of Democracy, the EIU's Democracy Index and the Bertlesmann Transformation Index, show little change or a slight decline in recent years (V-Dem Institute 2022; Economist Intelligence Unit 2022; Bertlesmann Transformation Index 2022). With oil money still available, the country is a stable, middling democracy.

Although a growing middle class in the capital Dili has benefited from government spending, little has changed for the impoverished, rural, agricultural majority. Most intermediate targets in the 2011-2030 Strategic Development Plan have not been met, and a long-overdue evaluation and revision of the plan began in 2022.

Six new oil and gas exploration contracts were awarded between the 2006 bid rounds and 2021, all without public tenders. Timor-Leste has a century-long history of petroleum prospecting, and most companies believe it is unlikely that commercially viable fields are waiting to be discovered. Therefore, the inexperienced national oil company TimorGAP, sometimes in partnership with small companies who have never undertaken a successful oil and gas project, is part of all these contracts (La'o Hamutuk 2022b).

In 2019-2022, Timor-Leste held its first tender for new oil exploration in 13 years. Seven companies[4] bid for six of the 18 blocks on offer, and five contracts were awarded, as shown in Figure 2. Nearly all the area in the eight offshore blocks which nobody bid for had previously been explored and relinquished.

Figure 2: Current and future oil and gas exploration contracts



Sources: Autoridade Nacional do Petróleo e Minerais 2018, 2022b; La'o Hamutuk 2020, 2022b.

Notes: Red companies in pink and green areas were awarded contracts in 2022; black companies bid but did not get contracts. Cross-hatched green lines show seismic exploration. Small circles are previously-drilled test wells. The red line at lower right is the 2019 Maritime Boundary with Australia.

The only large verified oil and gas reserve is the offshore Greater Sunrise field, which was discovered in 1974. The area is shared with Australia and was subject to a bitter, prolonged maritime boundary dispute which was settled in 2019. Sunrise development was suspended while the boundary was unresolved, and is still stalled because many in Timor-Leste insist that the gas be piped to Timor-Leste's south coast for liquefaction and export, and no one will finance that option.

In May 2018, when shifting political coalitions delayed enactment of the 2018 state budget, government withdrew $70 million from the Petroleum Fund without Parliamentary authorization.

[4] TimorGAP and ETO from Timor-Leste, HTS (Kazakhstan), Eni (Italy) and Santos (Australia). The last two are the only established companies with successful projects in Timor-Leste. Dravida (India/UAE) and Supernova (Netherlands) made bids but were not awarded contracts.

This probably illegal act was not contested in court, but Parliament has authorized all withdrawals since then in advance.

In 2018-2019, the government again proposed revising the Petroleum Fund Law and Petroleum Activities Law to weaken the ESI guideline, allow 5% of the PF to be invested in domestic petroleum operations (previously it could only invest in financial instruments outside the country), reduce judicial oversight of petroleum sector contracts and require oil companies operating in Timor-Leste to use less economical practices. Despite opposition from some Parliamentarians, the President and the courts, many of these amendments were enacted (Scheiner 2020).

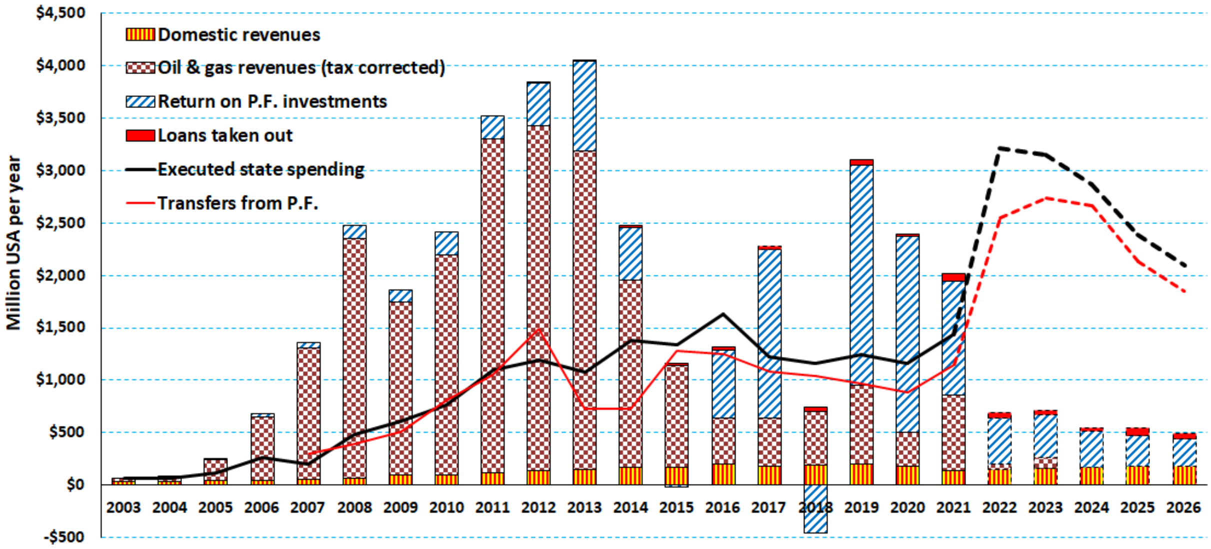
Because Sunrise joint venture partners ConocoPhillips[5] and Shell believed that a pipeline to Timor-Leste was not commercially optimal, they sold their 56.7% share of the Sunrise project to TimorGAP in 2019 for $650 million, which was borrowed from the Petroleum Fund. This was not in the state budget, and, having grown to $750 million with accrued interest, is now one of the Petroleum Fund's investments, even though it is not tradeable and may never be repaid (La'o Hamutuk 2021f). Annual repayments (more than $100 million/year) won't be due until 2027.

In mid-2020, Sunrise joint venture partner Woodside Petroleum, recognizing that the project may never be developed, revalued it at zero (Evans 2020). A few months later, TimorGAP's auditors told them to write down the value of their share to zero (TimorGAP 2022). Although the Ministry of Finance incorporated this revaluation when they calculated the Estimated Sustainable Income for the 2022 state budget (Ministry of Finance 2022a, Final Book 1, page 49), the Central Bank includes the non-zeroed Sunrise loan in the PF balance (Banco Central de Timor-Leste 2022). This confusion held up the 2020 Annual Reports of TimorGAP and of the Petroleum Fund (which is the responsibility of the Ministry of Finance). The Audit Court lamented these illegal delays when it reviewed the state accounts for 2020 (Tribunal de Recurso 2021a, 13). Nine months after the deadlines, TimorGAP published its report in March 2022, and the Ministry published its 2020 PF report the following month. The latter devalued the Sunrise investment by $86 million, due to risks that it may not be paid fully or on time (Ministry of Finance 2022c, 54).

Oil revenues dropped drastically after their 2012 peak, and, as Figure 3 shows, Timor-Leste has already received more than 99% of the total revenue it will get from Bayu-Undan (BU) and two smaller fields which are already used up. Although BU revenues increased in late 2021 and early 2022 due to high LNG and oil market prices, this will not last long. Production began to fall sharply at the end of 2021, as shown in Figure 4, and will cease before 2022 ends (Santos 2022).

[5] ConocoPhillips management had also developed a distaste for Timor-Leste due to unfounded tax evasion allegations.

Figure 3: Income to the state (including the Petroleum Fund)

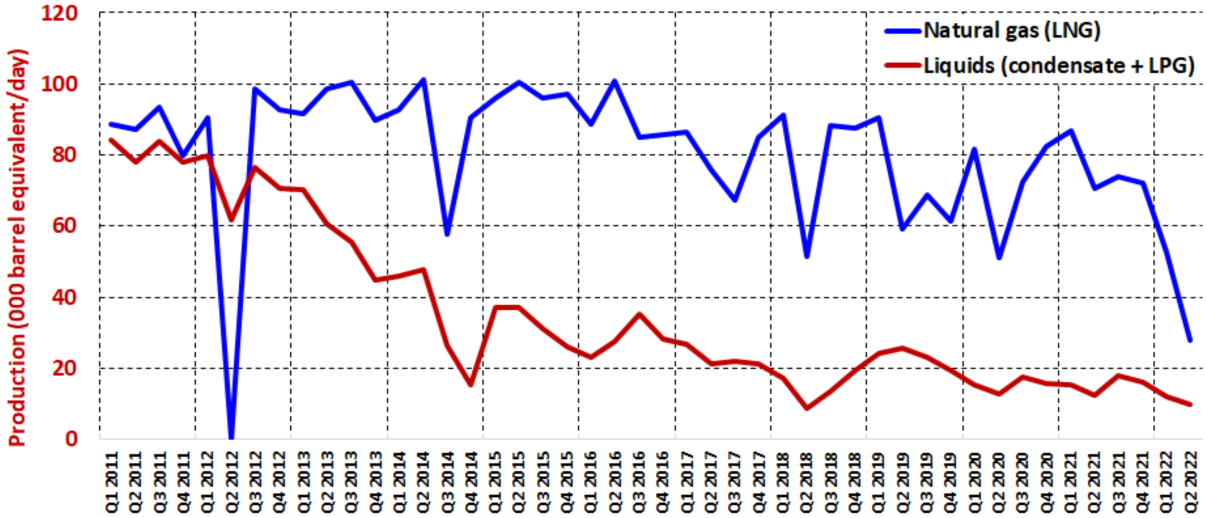


Source: Ministry of Finance 2022a Book 1 and previous years.

Note: Dashed lines and bars after 2021 are projections by the Ministry of Finance.

In mid-2021, Bayu-Undan operator Santos drilled three infill production wells in the nearly-depleted field to prolong its life a little. These wells did not increase production, but have slowed its inevitable decline, and high global gas and oil prices boosted revenues for a few months. Santos (which also operates the LNG plant in Australia which processes Bayu-Undan gas) received the greatest benefits: extending Bayu-Undan production will delay field decommissioning and keep the LNG plant active until not-yet-developed fields in Australia can provide methane to supply it (Santos 2022).

Figure 4: Bayu-Undan daily gas and liquids production rates

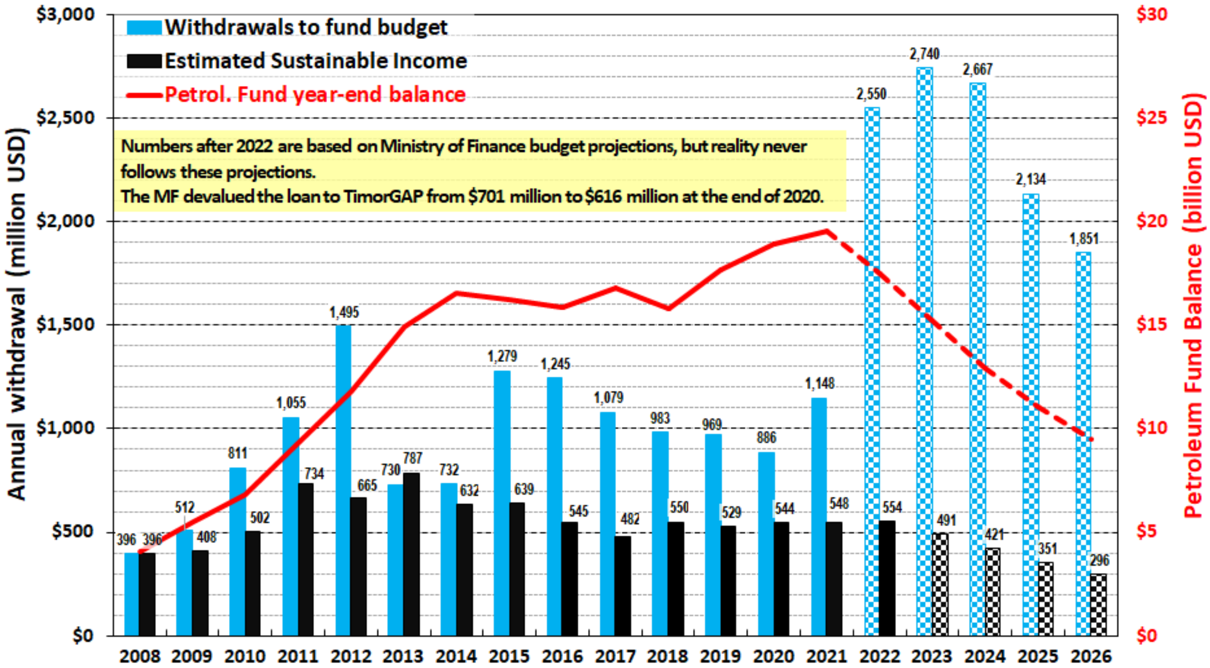


Source: Santos 2022.

A small Australian company, Carnarvon, drilled a test well in the offshore Buffalo field at the end of 2021, but results were not commercially viable. Other speculative projects are being discussed, and some could emerge from the recent bidding round, but they are too uncertain to estimate results. Nevertheless, if all planned projects achieve their proponents' optimistic targets, they might bring in about $1 billion to the state treasury, less than Timor-Leste received in a single quarter in 2012, not even enough to cover six months of today's state spending (Scheiner 2021, 16).

In August 2021, the balance in Timor-Leste's Petroleum Fund, buoyed by slow budget execution and ebullient financial markets, reached an all-time high of $19.7 billion. Falling stock prices reduced the value of its investments in the first half of 2022, and the balance at the end of June was $17.8 billion. From its creation through mid-2022, the PF has received $24.4 billion in petroleum revenues and $4.2 billion in interest and dividends on its investments. The unrealized value of the investments has increased by $3.3 billion (even after dropping $2.1 billion in the first six months of 2022). The government has withdrawn $14.2 billion from the Fund (far above ESI, which totaled $8.5 billion), which paid for 87% of state spending.

Figure 5: Historical and planned withdrawals from the Petroleum Fund, and PF balance

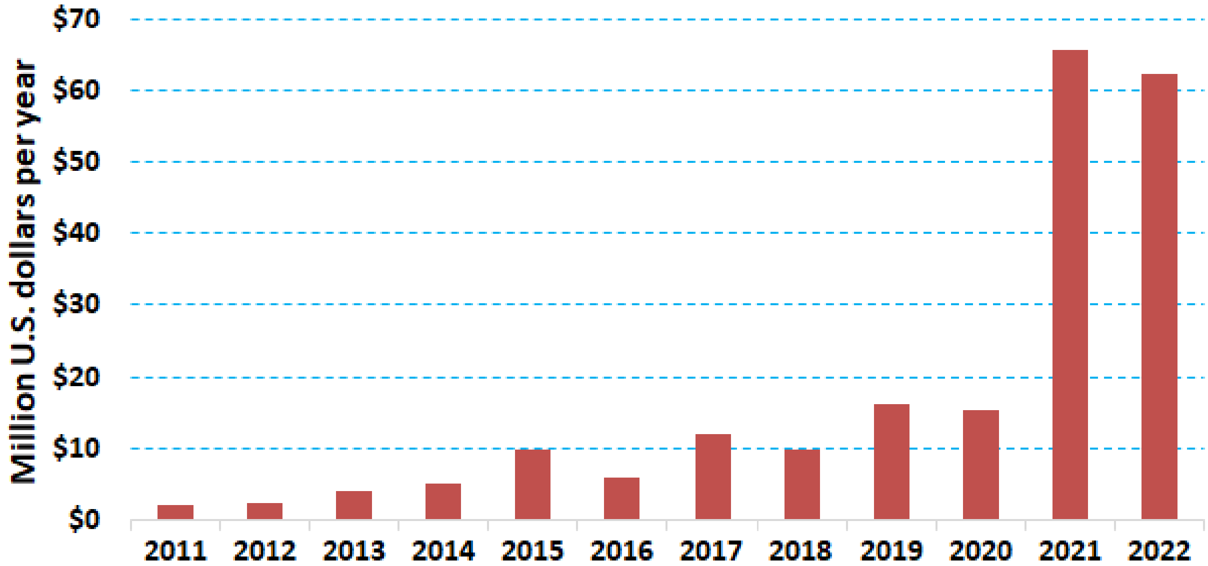


Sources: Ministry of Finance 2022a (Book 1), 2022d; República Democrática de Timor-Leste 2022a, 2022c; Banco Central de Timor-Leste 2022.

By mid-2022, $253 million in foreign loans to Timor-Leste had been disbursed, out of $559 million contracted (Ministry of Finance 2022a), and more loan agreements are being signed (International Monetary Fund 2021). Debt service consumes about 0.6% of the state budget, but this will double in 2023 when some grace periods expire.

Because TimorGAP's Sunrise and Tasi Mane projects may never happen, and its other contracted areas are unlikely to produce substantial revenue, the national oil company is searching for a mission. In addition to operating retail petrol stations, the company will be the main importer of diesel fuel for power plants. Although it has produced hardly any income, TimorGAP's subsidy from the state budget quadrupled in 2021, to $66 million. When the Government proposed to reduce it to $35 million for 2022, the Minister of Petroleum and Mining persuaded Parliament to add $27 million more. These subsidies are provided through lump-sum public transfers, so the budget law does not specify how the money should be used.

Figure 6: State subsidies to TimorGAP national petroleum company



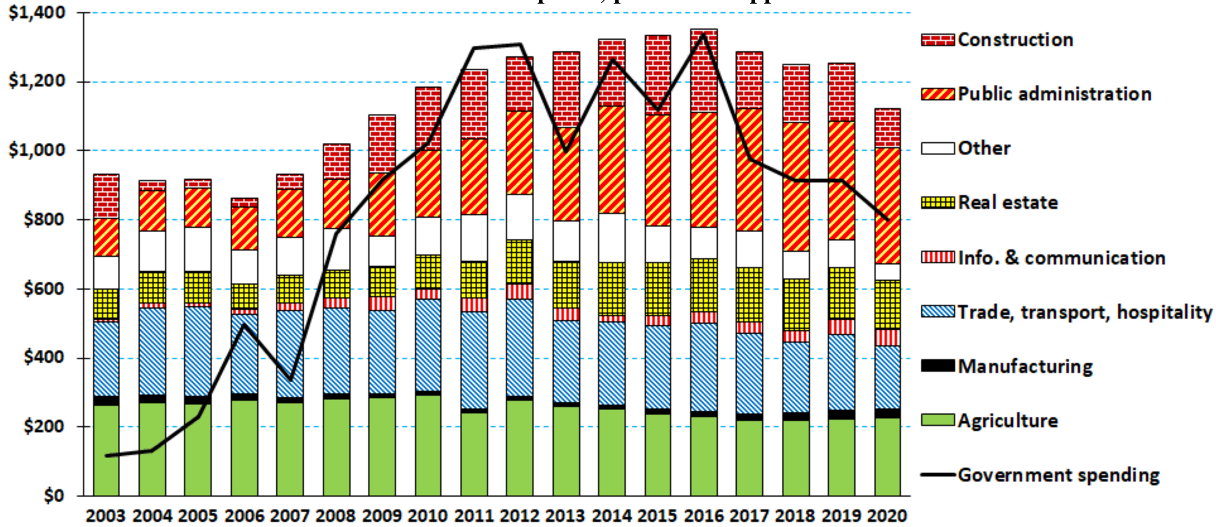
Sources: TimorGAP 2022; Ministry of Finance 2022b.

Transparency laws remain in force, although few people use or understand the published information, and data is increasingly hard to access (La'o Hamutuk 2022f). Timor-Leste's strong initial commitment to EITI and contract transparency has weakened. EITI certification was briefly suspended in 2017, and the most recent report is for 2019. From 2015 to 2021, the Open Budget Survey scores for the country improved slightly on transparency but worsened on public participation (International Budget Partnership 2022). Its rank on the Resource Governance Index dropped from 12th in the world in 2010 to 43rd in 2017 (Revenue Watch 2010; Natural Resource Governance Institute 2017).

In early 2022, Timor-Leste adopted a new budgetary process based on program-based budgeting (República Democrática de Timor-Leste 2022b; La'o Hamutuk 2021g, 2022a). Some aspects may improve planning and oversight, but the new law requires less transparency than its predecessor, creating opportunities and challenges for citizens engaging with the budget process (La'o Hamutuk 2022e). Although it was developed with advice from many international specialists in public financial management, the new system does not address fundamental issues discussed in this paper, and fails to recognize the unique characteristics of petroleum export dependency.

Because the state budget is supported by petroleum and investment revenues, other economic development has been limited, and the entire economy relies on state spending. Although about half of the $16 billion spent by the state in 2008-2021 left the country to pay for imported goods and services, the remainder has been the principal driver of 'non-oil' GDP, which totaled $17 billion during those 14 years (see Figure 7). The top two segments, almost entirely funded by state spending, determine the GDP's rise and fall; productive sectors are virtually stagnant (General Directorate of Statistics 2021; International Monetary Fund 2021).

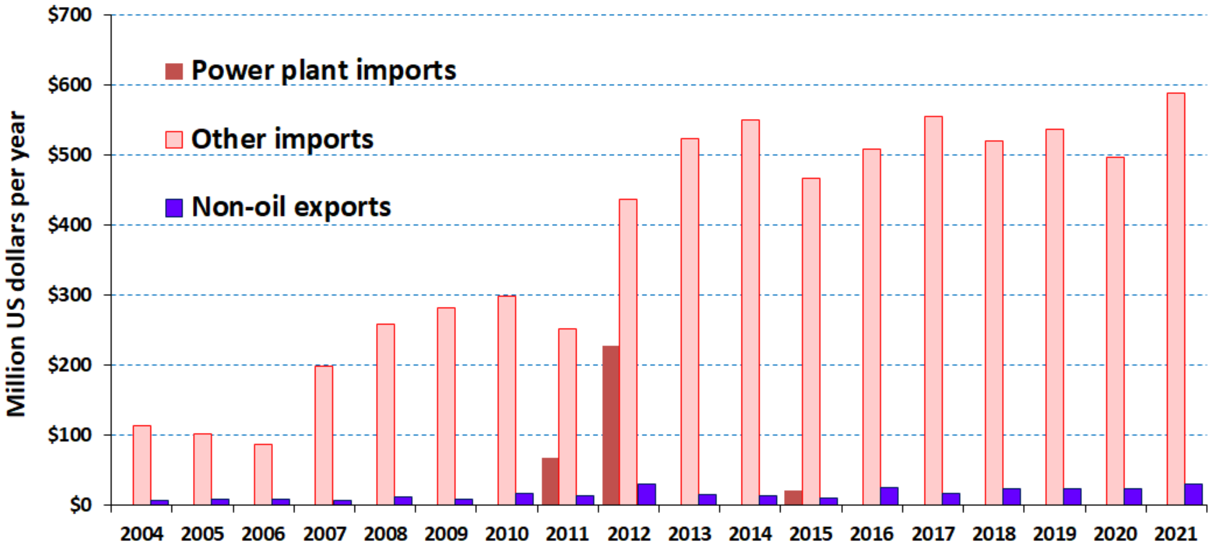
Figure 7: Sectoral contributions to non-oil GDP per capita
Constant 2015 prices, production approach



Source: General Directorate of Statistics 2021.

One impact of oil money is the tendency to import goods and services, rather than source them domestically, as shown in Figure 8. If Petroleum Fund income is not included, the country's international trade deficit is around $1 billion every year. Many of the imports could be produced locally, and about three-fourths of the non-oil exports are coffee.

Figure 8: Balance of non-oil goods trade



Source: General Directorate of Statistics 2022.

Money from the Petroleum Fund has a rentier effect. Many entrepreneurs seek rents (usually government contracts), rather than invest in productive commercial activities. Outside of the large subsistence farming sector, about half of the formal labor force in Timor-Leste works either for the state or for contractors paid by the state. Private sector jobs have been declining since 2014 (General Directorate of Statistics 2019), although the working-age population is growing rapidly. The peak of the post-war baby boom has just entered the labor force (United Nations Development Program 2018).

Where Timor-Leste is headed

Because exporting petroleum wealth has funded Timor-Leste for almost a generation, most politicians and citizens hope to continue to convert nonrenewable assets into cash forever, and are in denial that this is impossible. This political/psychological ‘resource curse’ has impeded difficult changes in policy that are essential to avoid economic collapse.

People don’t want to acknowledge that the quality of their lives could become much worse. Although the country still has high monetary and multi-dimensional poverty and malnutrition, oil revenues boosted its Human Development Index from 2002 to 2010, when it ranked 128th (of 189 nations). By 2020, its rank had fallen to 141 (United Nations Development Program 2020), having dropped more since 2015 than every country except Venezuela and Yemen. With inadequate attention to education, health care and economic diversification, the decline could accelerate.

Due to the Indonesian occupation, no oil or gas wells were drilled onshore in Timor-Leste between 1972 and October 2021, when the Feto Kmaus test well was drilled by the privately-held Australian start-up company Timor Resources. This well did not find commercially viable reserves, although the company is drilling in other areas in 2022. However, their optimistic estimate of the total reserve is equivalent to five months of Bayu-Undan production at its peak.

Petroleum advocates in industry and governments are joining the global push for ‘Net Zero’ greenhouse gas emissions to greenwash or conceal the climate consequences of continuing fossil fuels extraction. In Timor-Leste, Santos would like to use the soon-to-be-depleted Bayu-Undan reservoir to store carbon dioxide emitted by natural gas extraction from carbon-intensive fields in Australia. Although this Carbon Capture and Storage (CCS) project will not capture all of the CO_2 released by these reserves, it might provide regulatory and public relations cover for the companies, as well as a little income to Timor-Leste. Timorese civil society calls it “Carbon colonialism” (Santos 2022; Evans 2022; Robert 2022; La’o Hamutuk 2021e, 2022b).

Timor-Leste officials also hope for large mining revenues, although current mining is only sand and gravel for local construction projects. They would like to reopen marble quarries which operated during the Portuguese and Indonesian periods – the only profitable mineral extraction in the country’s history. A Mining Code was enacted in 2021, and Government is setting up a National Mining Company and a Minerals Fund, creating a mirage that minerals could be as lucrative as oil (La’o Hamutuk 2021b).

Withdrawals from the Petroleum Fund consistently ignore the sustainability guideline, and are often more than the government can spend. During 2015-2021, withdrawals averaged more than double ESI, and the Government expects to withdraw more than five times the total ESI during 2022-2026 (Ministry of Finance 2022a). In 2021, the Ministry of Finance segmented the Petroleum Fund into “liquidity” and “growth” portfolios to enable riskier investments while protecting about one-fourth of the fund in low-risk, short-term, low-return instruments (Ministry of Finance 2021a, 2021b, 2022a).

For several years, independent projections have estimated that the Petroleum Fund may be empty in a few years (Scheiner 2015, La’o Hamutuk 2015), and by 2021 some officials agreed (Ministry of Finance 2022a (Book 1, Figures 17 and 18). A few months later, the Ministry stated that “Timor-Leste will reach a fiscal cliff by 2034” which “will force a radical cut in all spending …” (such as slashing public employees’ salaries by 85%) (Ministry of Finance 2022e), and the World Bank discussed the “inescapable macro-fiscal cliff in the next decade” (World Bank 2022, page 30).

Nevertheless, politicians still believe, and policies continue to be based on, blind faith that, because oil money has carried the country thus far, it will continue to do so indefinitely. State budgets and projects are approved without considering financing sources, future debt service, maintenance, or related medium- and long-term expenses. Current and proposed spending rose rapidly in 2022 (including a hasty mid-year budget rectification that increased 2022 spending by $1.2 billion), notwithstanding its unsustainability. The Petroleum Fund is still widely seen as an inexhaustible resource (although the recent volatile investment climate is raising doubts).

Many people, following the lead of former Prime Minister Xanana Gusmão, envision the undeveloped Greater Sunrise gas and oil field as part of the Tasi Mane Project (TMP). This megaproject on the south coast will include an oil refinery, LNG plant, offshore gas and onshore oil pipelines, a supply base for offshore petroleum projects, highway, airports, and new towns. It will cost $15-$20 billion to build, although the financial returns are dubious and no investors have come forward (La'o Hamutuk 2019). Timor-Leste has already spent $1.2 billion on it, half for a controlling interest in the Sunrise Joint Venture. They use the rest to build an airport and part of a highway, both of poor quality and rarely used.

Figure 9: Money spent, budgeted and required to build the Tasi Mane Project
(million USD)

Component	Location	Status	Spent through 2021	Budgeted 2022	Budgeted 2023-2026	Estimated total capital cost	Percent budgeted
Airport	Suai	Constructed	78	3	7	100	88%
Supply base	Suai	Tender pending	52	2	747	900	89%
Highway	Suai-Fatukai	Mostly built	303	3	14	340	94%
Highway	Fatukai-Beaçu	Not started	3	2	20	1,320	2%
Airport	Viqueque	Not started	-	-	-	75	0%
Oil refinery & pipelines	Betano	Pending design	5	-	6	1,500	1%
Gas pipeline, LNG plant & port	Sunrise-Beaçu	Pending design, seeking financing	51	-	21	6,000	1%
57% share of Greater Sunrise Joint Venture	Offshore	Borrowed directly from the Petroleum Fund	650			650	100%
57% of Sunrise upstream capital expenditure	Offshore	Pending design, seeking financing	-	-	-	6,840	0%
Administrative and other costs	Dili	Ongoing	90	58	-	500	30%
TOTAL			**1,231**	**67**	**815**	**18,225**	**12%**

Sources: Ministry of Finance 2022a, 2022b; TimorGAP 2022; Tribunal de Recurso 2021a.

Note: This table does not include $561 million in interest to be paid on the loan to buy into Greater Sunrise.

Analyses of TMP and Greater Sunrise have exaggerated its benefits to justify the project. Tasi Mane's lost opportunity costs – neglecting other economic sectors which could create far more Timorese revenues, jobs and subcontracts – are overlooked. Investing money in Timor-Leste's coffee production could create six times as many jobs and six times as much GDP growth per dollar as investing in the TMP (Inder and Qu 2019).

In mid-2020, Prime Minister Taur Matan Ruak appointed new heads of the Ministry of Petroleum and Minerals, the National Petroleum and Minerals Authority and TimorGAP. Although the new leaders promised that Greater Sunrise and Tasi Mane would be reevaluated because previous studies were biased, political and public pressures have kept things moving in the same direction, and no new studies have been released (Kehoe 2022a, 2022b).

Some cautionary signs

Systematic analysis of the forces, thinking and reasons behind Timor-Leste's looming fiscal cliff is beyond the scope of this paper. Nevertheless, the following are some of the events, actions and factors which led to this situation.

As described above, the state budget and economy depend on petroleum revenue. Because that money has been available, people and organizations (including government) who need something would rather buy it than build it. Many things are imported, including food and essential goods which could be produced locally.

Money is more readily spent on some things than on others, and is seen as the solution to most problems. Well-connected people go to overseas schools and hospitals (often paid for by the state), while local education and health care systems remain underfunded and substandard. In 2022, Timor-Leste allocated 8% of its state budget to health and education (La'o Hamutuk 2022a; Ministry of Finance 2022d), less than one-third of what is considered good practice in developing countries (United Nations Development Program 2011, 123).

It is easier to hire a foreign company to build a large infrastructure project than it is to develop local, decentralized capacity to address communities' needs for rural roads or water supply. The largest expenditures have been to build national roads, electricity systems, ports and airports, which disproportionately benefit the small upper and middle classes, not the rural poor majority. Little attention is paid to management, design, construction quality or ongoing maintenance (World Bank 2021).

The expansion of the Petroleum Fund into the global stock market caused returns to fluctuate, and PF investments lost money in 2015, 2018 and the first half of 2022 (La'o Hamutuk 2022c; Banco Central de Timor-Leste 2022). Although foreign advisors promoting this diversification talked about a long-term investing perspective, most politicians, responsible for annual budgets and facing voters every five years, have a shorter planning horizon. (Ryan-Kane 2010, 8-11; La'o Hamutuk 2010, 3-4).

Lessons which could be learned

Although it may be too late for Timor-Leste to avoid the 'fiscal cliff' when the Petroleum Fund runs out, it is not too late to reduce the severity and duration of its impacts. In approaching this challenge, it may be useful to identify some underlying factors which brought the country to this point, especially those which were not foreseen when Timor-Leste created its petroleum governance regime 17 years ago. With hindsight, many of them seem obvious.

Anything that is legislated can be revised. A civil society submission on the draft Petroleum Fund Law highlighted the need for strong laws to protect the nation's resource birthright "from hypothetical ill-intentioned, corrupt institutions and individuals", encouraging "the current Government to establish structures that protect the people of Timor-Leste regardless of who is in power in the future" (La'o Hamutuk 2004, 8-9). In retrospect, this may be impossible in a democratic society, because even a leak-proof legal system can be perforated by subsequent laws.

Democratic governance works against long-term strategic planning. Politicians can only remain in power if they win the next election, so providing immediate visible benefits takes priority over longer-term outcomes. This ‘front-loading’ policy of spending unsustainably in anticipation of future development helps win elections, but saving money or investing in human resources, which would produce better outcomes in the long run, does not.

A rentier economy is addictive. When one can receive money without doing any work, it is tempting to act as if the windfall will continue indefinitely. Although this finite buried treasure inevitably runs out, many are seduced by the fantasy that undeveloped petroleum or mineral deposits will continue to provide money, even when geology, research, corporate reports to regulators, and potential investors say otherwise (Neves, 2022).

This factor is exacerbated by limited numeracy and scientific knowledge among politicians and citizens, few of whom have had quality formal education. Although an oil and gas mega-project (such as Bayu-Undan) could yield tens of billions of dollars in revenues, most are much smaller, and the majority of test wells drilled worldwide do not find any commercially viable deposits (Westwood Global Energy, 2019). Few people consider the impacts of Timor-Leste’s oil extraction on the climate, or the pending changes in the global energy economy to confront climate change.

Petroleum extraction and processing involve hardly any Timorese workers or subcontractors, with negligible spinoffs into the local economy. In this highly automated, capital-intensive industry, oil companies pre-fabricate major components in specialized overseas facilities. Although a few Timorese workers may do manual labor during construction or installation, there are very few permanent positions for medium- and low-skilled workers.

Private companies take decisions to maximize their profits. Although a commercially viable petroleum project can benefit both a company and the state, legitimate investors and oil companies opt for the most profitable projects. Furthermore, companies dislike dealing with governments they perceive as unreasonable. Other companies or investors, perhaps with less experience or a hidden agenda, may arrive to fill the space … or may not. Although China has not yet taken advantage of Timor-Leste’s vulnerability, some western politicians and journalists are worried that it could (La’o Hamutuk 2021a).

The successful independence struggle left a complex legacy. In 1999, Timor-Leste ousted the Indonesian occupiers in defiance of ‘experts’ around the world who told them it would never happen. In 2018 they transcended ‘expert’ advice again, coercing Australia to agree to a fair maritime boundary. Some Timorese leaders, especially veterans of the independence struggle, now believe they can accomplish anything, regardless of physical or economic realities.

Although the first Prime Minister, who guided the creation of the petroleum regime, was a technocrat who had been in exile during the Indonesian occupation, his successors were leaders of the underground resistance, with different skills than are optimal for democratic governance. (When you are hiding from a murderous occupying army, you can’t practice transparency, conduct public consultations, do extensive research or consider long-term sustainability.) The attributes of a guerilla commander are not well-suited to managing a peaceful state – but most voters will elect national heroes for as long as they seek power.

Except for a few who went into exile, until 2002 no Timorese person had lived under a government which even pretended to listen to its citizens or to serve the public interest. After they created their own democratic state, political leaders and citizens had to unlearn skills for resisting dictatorship and to learn basic civics practices -- coalition-forming, lobbying, building consensus, seeking public input, listening to people from different backgrounds or parties, making choices based on 'what' rather than 'who.' Although some progress has been made, historical and personal connections and animosities still often outweigh evidence in policy decisions.

One consequence of prolonged war is pervasive trauma. For more than two decades, most people lived every day with the well-founded fear that an Indonesia soldier was going to kill or torture them, kidnap their family, or burn down their home and farm. In such an environment, it makes little sense to plan for the future – all one can do is survive until tomorrow. These lessons are hard to unlearn, and 'sustainable development to benefit current and future generations' sounds more like a cliché than a possibility.

After evicting the Indonesian occupation, Timor-Leste was inundated with international advisors. Many of them perceived Timor-Leste as a 'tabula rasa' (perhaps because they first heard of the country in 1999), and ignored Timorese people's skills, experience, needs, wishes and culture. A few years later, as international attention moved elsewhere, even less-qualified advisors got jobs in Timor-Leste. Timorese officials gradually lost respect for 'expertise' and began to wonder whether anyone really knows what they're doing. Timorese officials with limited education and experience believe that they can do as well as foreign 'experts,' often ignoring or rejecting well-founded advice.

Oil and gas has become a patriotic rallying cry. Politicians point out that "Australia got the Bayu-Undan pipeline, so it's only fair for Timor-Leste to get the one from Sunrise," regardless of the economic, social and environmental costs, benefits and risks of various options. The undersea gas pipeline is called a *kadoras,* the Tetum word for a bamboo pipe which brings vital water to a house or farm (derived from the Indonesian word for gift), and many people view it as being a similarly indubitable benefit. The *kadoras* becomes a goal in itself, rather than one option for the most lucrative, safe and reliable way to process and sell the gas (Kehoe 2022b).

Conclusion

Timor-Leste is a petro state without much petrol. Although petroleum dependency is not the only source of Timor-Leste's problems, the easy money and temptations it led to have lasting consequences. Transition from a rentier economy is very difficult. Furthermore, decisions dominated by nationalistic, political, polemical or partisan priorities are often suboptimal, leading to lost opportunities or squandering public resources.

In addition to learning from experience, the dynamics of Timor-Leste are changing. The majority of Timor-Leste's people were born after Indonesian rule ended in 1999; half the voters in the 2022 election were under 35. Some have had much better educational opportunities and international exposure than their elders did, and have the privilege of weighing the impacts on their children and grandchildren as they make decisions. But generational change and PTSD recovery may take longer than the limited extractive wealth will last (Cardoso 2022).

Although Timor-Leste started with many advantages, the best governance and revenue management practices have not been enough to prevent impending calamitous consequences of addiction to oil and gas money. Its experience shows that many factors in a young, post-conflict, rentier state can swamp well-designed measures to support sustainable finances and accountability.

References

Many documents are referenced on both official and La'o Hamutuk websites, as the former don't always work or endure. All were accessed in August 2022 or later.

Alkatiri, Mari. 2003. Statement to the Extractive Industries Transparency Initiative (EITI) London Conference, June 17, 2003. https://www.laohamutuk.org/Oil/EITI/03AlkatiriEITI.htm

Autoridade Nacional do Petróleo e Minerais. 2018. Interactive map of Timor Sea contract areas. https://web.anpm.tl/webs/anptlweb.nsf/pgLafaekMap

Autoridade Nacional do Petróleo e Minerais. 2022a. JPDA production and revenue data. https://web01.anpm.tl/webs/anptlweb.nsf/pgLafaekDataGasListHTML, http://www.anpm.tl/publish-what-you-pay/ and http://web01.anpm.tl/webs/anptlweb.nsf/pgLafaekActivityList?openview&RestrictToCategory=Aug-2022

Autoridade Nacional do Petróleo e Minerais. 2022b. Second Licensing Round 2019/2022. http://licensinground.anpm.tl/

Banco Central de Timor-Leste. 2022. Petroleum Fund quarterly and monthly reports. https://www.bancocentral.tl/en/go/publications-key-report-petroleum-fund-report

Barma, Naazneen. 2021. Do petroleum rents fuel conflict in developing countries? A case study of political instability in Timor-Leste. *Energy Research & Social Science*, 75. https://doi.org/10.1016/j.erss.2021.102018

Bertlesmann Transformation Index. 2022. https://bti-project.org/en/reports/country-report/TLS

Cardoso, Joao da Cruz. 2022. Timor-Leste's presidential election: Watching for generational change. Lowy Institute Interpreter. https://www.lowyinstitute.org/the-interpreter/timor-leste-s-presidential-election-watching-generational-change

Collier, Paul. 2010. The Political Economy of Natural Resources. *Social Research*, 77(4), 1105-1132. https://ora.ox.ac.uk/objects/uuid:5c649dfd-7738-4178-a1ee-1e0d151c3741

Economist Intelligence Unit. 2022. Democracy Index 2021. https://www.eiu.com/n/campaigns/democracy-index-2021/

Evans, Damon. 2020. Sunset at East Timor's Greater Sunrise LNG after Woodside write-down. *Energy Voice*, 22 July 2020. https://www.energyvoice.com/oilandgas/asia/254153/sunset-at-east-timors-greater-sunrise-lng-after-woodside-write-down/

Evans, Damon. 2022. East Timor NGO hits out at Santos' carbon storage plans for Barossa LNG. *Energy Voice*, 15 February 2022. https://www.energyvoice.com/oilandgas/asia/387738/east-timor-ngo-hits-out-at-santos-carbon-storage-plans-for-barossa-lng/

General Directorate of Statistics, RDTL. 2019. *Business Activity Survey 2018.* DGE & Ministry of Finance. https://www.statistics.gov.tl/wp-content/uploads/2019/12/FINAL_Publication-BAS2018-English.pdf or https://www.laohamutuk.org/DVD/DGS/BAS2018en.pdf

General Directorate of Statistics. 2021. *Timor-Leste National Accounts 2000–2020.* DGE & Min. of Finance. https://www.statistics.gov.tl/wp-content/uploads/2020/10/Timor-Leste-National-Accounts-2000-2019-Versaun-Final_201008.pdf or https://www.laohamutuk.org/DVD/DGS/NatlAccts2020en.pdf

General Directorate of Statistics. 2022. *Timor-Leste External Trade reports*. https://www.statistics.gov.tl/category/survey-indicators/external-trade-statistics/?lang=en

Humphreys, Macartan, Jeffrey Sachs, and Joseph E. Stiglitz. 2007. Escaping the Resource Curse. New York: Columbia University Press.

Inder, Brett & Qu, Nan. 2019. "*Coffee in Timor-Leste: What do we know? What can we do?"* Monash University Research Briefs on Timor-Leste (RB-TL1). https://drive.google.com/file/d/1oMufKgFvLVGPjvfPOPSiFK1pOzWthK1j

International Budget Partnership. 2022. Open Budget Survey 2021: Timor-Leste. https://internationalbudget.org/open-budget-survey/country-results/2021/timor-leste

International Monetary Fund. 2021. Democratic Republic of Timor-Leste: 2021 Article IV Consultation-Press Release; Staff Report. https://www.imf.org/en/Publications/CR/Issues/2021/07/14/Timor-Leste-2021-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-462155

John, Samuel, Elissaios Papyrakis, and Luca Tasciotti, 2020. Is there a resource curse in Timor-Leste? A critical review of recent evidence. *Development Studies Research*, *7*(1), 141-152. https://doi.org/10.1080/21665095.2020.1816189

Karl, Terry Lynn. 1997. "Paradox of Plenty: Oil Booms and Petro-States" University of California Press.

Kehoe, John. 2022a. Leaked report backs East Timor for Woodside's Sunrise gas project. *Australian Financial Review*, 1 August 2022. https://www.afr.com/companies/energy/leaked-report-backs-east-timor-for-woodside-s-sunrise-gas-project-20220731-p5b605

Kehoe, John. 2022b. East Timor warns Woodside over Sunrise gas project. *Australian Financial Review*, 16 August 2022. https://www.afr.com/companies/energy/east-timor-warns-australia-over-sunrise-gas-project-20220815-p5b9zr

La'o Hamutuk. 2004. Submission to the Petroleum Fund Steering Group, Ministry of Planning and Finance, regarding the Public Consultation Discussion Paper on Establishing a Petroleum Fund for Timor-Leste. December 5. https://www.laohamutuk.org/Oil/PetFund/Consult/LH%20PetFund%20submission.pdf

La'o Hamutuk. 2005. *Enactment of Timor-Leste Petroleum Regime.* https://www.laohamutuk.org/Oil/PetRegime/05PetrolActPassage.htm

La'o Hamutuk. 2006a. *Press Releases and Articles about TSDA 2006 Bidding Round.* https://www.laohamutuk.org/OilWeb/JPDA/TSDAbidround06/JPDABidRound2006.htm

La'o Hamutuk. 2006b. *Timor-Leste First Licensing Round, 2005-6.* https://www.laohamutuk.org/OilWeb/RDTLdocs/Licensing/Licensing06.htm

La'o Hamutuk. 2007. Second Submission to the Ministry of Natural Resources, Minerals and Energy Policy from La'o Hamutuk regarding the Legislative Package on Reorganizing Petroleum Industry Activities in Timor-Leste, July 27. https://www.laohamutuk.org/Oil/PetRegime/Restruc/07RestructLHSub2Jul07.htm

La'o Hamutuk. 2008. *Sunrise LNG in Timor-Leste: Dreams, realities and challenges*. Timor-Leste Institute for Reconstruction Monitoring and Analysis. https://www.laohamutuk.org/Oil/LNG/LNGReport.pdf

La'o Hamutuk. 2010. *Submission to the Ministry of Finance Regarding the Proposed Revision of the Petroleum Fund Law, November 8.* https://www.laohamutuk.org/Oil/PetFund/revision/LHSubRevPFLaw5Nov2010En.pdf

La'o Hamutuk. 2012. *Trying to Scam a Billion from the Petroleum Fund.* https://www.laohamutuk.org/Oil/PetFund/ACI/10AsianChampInvestment.htm

La'o Hamutuk. 2015. How long will the Petroleum Fund carry Timor-Leste? https://www.laohamutuk.org/econ/model/13PFSustainability.htm

La'o Hamutuk. 2017. Power Plant and National Electrical Grid 2011-17. https://www.laohamutuk.org/Oil/Power/2011/11PowerPlant2011.htm

La'o Hamutuk. 2019. South coast Petroleum infrastructure project. https://www.laohamutuk.org/Oil/TasiMane/11TasiMane.htm

La'o Hamutuk. 2020. 2016-2020: Compulsory conciliation leads to a Maritime Boundary Treaty between Australia and Timor-Leste. https://www.laohamutuk.org/Oil/Boundary/18ConcilTreaty.htm

La'o Hamutuk. 2021a. Chinese involvement in Timor-Leste: Myths and Facts. https://www.laohamutuk.org/econ/ChinaInTLMisereorOctober2021en.pdf

La'o Hamutuk. 2021b. Creating a Mining Code for Timor-Leste. https://www.laohamutuk.org/Oil/Mining/17MiningLaw.htm

La'o Hamutuk. 2021c. Making the Oil Companies Pay What They Owe. https://www.laohamutuk.org/Oil/tax/10BackTaxes.htm#collect

La'o Hamutuk. 2021d. Bobby Boye: Convict, Advisor and Fraud. https://www.laohamutuk.org/econ/corruption/Boye/14BoyeCase.htm

La'o Hamutuk. 2021e. Carbon Capture and Storage under the Timor Sea: Climate Change Prevention or Carbon Colonialism? https://laohamutuk.blogspot.com/2021/06/carbon-capture-and-storage-under-timor.html

La'o Hamutuk. 2021f. Timor-Leste buys into the Sunrise oil and gas project. https://www.laohamutuk.org/Oil/Sunrise/18SunriseBuyout.htm

La'o Hamutuk. 2021g. LH asks Parliament to strengthen proposed Budget Framework Law. http://laohamutuk.blogspot.com/2021/06/lh-asks-parliament-to-strengthen.html

La'o Hamutuk. 2022a. 2022 General State Budget. https://www.laohamutuk.org/econ/OGE22/21OGE22.htm

La'o Hamutuk. 2022b. Petroleum projects and production sharing contracts. https://www.laohamutuk.org/Oil/PSCs/10PSCs.htm

La'o Hamutuk. 2022c. [Operation of] Timor-Leste Petroleum Fund. https://www.laohamutuk.org/Oil/PetFund/05PFIndex.htm

La'o Hamutuk. 2022d. TimorGAP: Timor-Leste's National Oil Company. https://www.laohamutuk.org/Oil/PetRegime/NOC/10Petronatil.htm

La'o Hamutuk. 2022e. Open Letter to Parliament about the proposed Major Planning Options Law. https://www.laohamutuk.org/econ/OJE23/MOP/220524LHbaPNPropostaLeiOpsaunPrinsipalPlanuEn.pdf

La'o Hamutuk. 2022f. Transparency requires information, not just pretty pictures. https://laohamutuk.blogspot.com/2022/08/transparency-requires-information-not.html

Lundahl, Mats, and Fredrik Sjöholm. 2019. *The Creation of the East Timorese Economy – Volume 2: Birth of a Nation*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-22052-5

Ministry of Finance, RDTL. 2021a. Jornada Orsamentál ba OJE 2022: Jestaun Fundu Petrolíferu. https://www.laohamutuk.org/econ/OGE22/JO/210625JOFiskal.pdf

Ministry of Finance. 2021b. Amendment No. 15 to Annex 1 of Investment Management Agreement with Central Bank of Timor-Leste. https://www.bancocentral.tl/uploads/documentos/documento_1626397613_8407.pdf or https://www.laohamutuk.org/Oil/PetFund/2021/210630BCTL-MF%20mandatePF%20investments.pdf

Ministry of Finance. 2022a. State Budget documents for 2022, including enacted and rectified budgets. https://www.laohamutuk.org/econ/OGE22/21OGE22.htm#docs

Ministry of Finance. 2022b. Budget Transparency Portal. http://www.budgettransparency.gov.tl/public/index?&lang=en

Ministry of Finance. 2022c. Timor-Leste Petroleum Fund: Annual Report 2020. https://www.laohamutuk.org/Oil/PetFund/2022/220411MF_PFAR20en.pdf

Ministry of Finance. 2022d. Proposed 2022 budget rectification law, including explanatory material. https://www.laohamutuk.org/econ/OGE22/OR/220427ProposedOR2022en.pdf

Ministry of Finance. 2022e. Proposed 2023 Major Planning Options Law, including explanatory material. https://www.laohamutuk.org/econ/OJE23/MOP/Proposta_Lei_GOP_2023en.pdf

Ministry of Planning and Finance, RDTL. 2004. Public Consultation Discussion paper "Establishing a Petroleum Fund for Timor-Leste", October. https://www.laohamutuk.org/Oil/PetFund/Consult/TL%20MOPF%20Fund%20discussion%20paper.pdf

Natural Resource Governance Institute. 2017. Timor-Leste Country Profile. https://resourcegovernanceindex.org/country-profiles/TLS/oil-gas?years=2017

Neves, Guteriano. 2022. Timor-Leste's Petroleum Revenues: The Challenges of Managing 'Easy Money' https://th.boell.org/en/2022/03/21/timor-leste-petroleum-fund

República Democrática de Timor-Leste. 2005a. Lei no. 9/2005 de 3 de Agosto. Lei do Fundo Petrolífero. http://www.mj.gov.tl/jornal/public/docs/2002_2005/leis_parlamento_nacional/9_2005.pdf

República Democrática de Timor-Leste. 2005b. Lei no. 13/2005 de 2 de Setembro. Lei das Actividades Petrolíferas. http://www.mj.gov.tl/jornal/public/docs/2002_2005/leis_parlamento_nacional/13_2005.pdf

República Democrática de Timor-Leste. 2021. Resolução do Governo N.º 133/2021 de 15 de Dezembro. Aprova o Projeto de Investimento da Sociedade Comercial Pelican Paradise Group Limited e a Minuta do Respetivo Acordo Especial de Investimento [Government Resolution No. 133/2021 – Approves the Investment Project of the Company Pelican Paradise Group Limited and the Respective Special Investment Agreement Protocol]. *Jornal da República*, Series I, No. 50A. http://www.mj.gov.tl/jornal/public/docs/2021/serie_1/SERIE_I_No_50_A.pdf

República Democrática de Timor-Leste. 2022a. Lei N.º 1/2022 de 3 de Janeiro. Orçamento Geral do Estado para 2022 [Law No. 1/2022 - General State Budget for 2022]. *Jornal da República*, Series I, No. 1. http://www.mj.gov.tl/jornal/public/docs/2022/serie_1/SERIE_I_NO_1.pdf

República Democrática de Timor-Leste. 2022b. Lei N.º 2/2022 de 10 de Fevereiro. Enquadramento do Orçamento Geral do Estado e da gestão financeira [Law No. 2/2022 - Budgetary Framework and financial management. *Jornal da República*, Series I, No. 7A. http://www.mj.gov.tl/jornal/public/docs/2022/serie_1/SERIE_I_NO_7_A.pdf

República Democrática de Timor-Leste. 2022c. Lei N.º 6/2022 de 18 de Maio. Primeira alteração à Lei n.º 1/2022, de 3 de janeiro, Orçamento Geral do Estado para 2022, e criação do Fundo dos Combatentes da Libertação Nacional [Law No. 6/2022 – First amendment to Law No. 1/2022 - General State Budget for 2022, and creation of the Fund for National Liberation Combatants]. *Jornal da República*, Series I, No. 20A. http://www.mj.gov.tl/jornal/public/docs/2022/serie_1/SERIE_I_NO_20A.pdf

Revenue Watch. 2010. 2010 Revenue Watch Index, 16. https://www.resourcegovernance.org/rwindex2010/pdf/RevenueWatchIndex_2010.pdf

Robert, John. 2022. Santos' Proposed New Darwin Harbour Pipeline for Barossa Gas – Potentially Enabling a CCS Scheme – Remains Problematic. Institute for Energy Economics and Financial Analysis, February. https://ieefa.org/wp-content/uploads/2022/02/Santos_Proposed-New-Darwin-Harbour-Pipeline-for-Barossa-Gas-Remains-Problematic_February-2022.pdf

Ross, Michael. 2018. The Politics of the Resource Curse: A Review. *The Oxford Handbook of the Politics of Development*.

Ryan-Kane, Peter. 2010. From Oil to Financial Assets: Planning for a Sustainable Future for Timor-Leste, Towers Watson, March 2010. https://www.laohamutuk.org/Oil/PetFund/revision/Peter6Mar10En.pdf

Santos. 2022. Quarterly Activities Reports to ASX. https://www.santos.com/investors/company-reporting/

Scheiner, Charles. 2015. "Can the Petroleum Fund exorcise the resource curse from Timor-Leste?" In *A new era? Timor-Leste after the UN*, edited by Sue Ingram, Lia Kent, & Andrew McWilliam, 73-101. Canberra: ANU Press. https://doi.org/10.22459/NE.09.2015

Scheiner, Charles. 2020. "Implications of recent changes to Timor-Leste's Petroleum Fund." In *Understanding Hatene kona ba Compreender Timor-Leste 2019.* Edited by Steven Farram et al, 318-330. Melbourne: Swinburne University of Technology. https://researchbank.swinburne.edu.au/file/27b705e3-fda5-481d-927d-4bec1b7245d5/1/2020-farram-proceedings_volume_1.pdf. Updated version at https://www.laohamutuk.org/Oil/PetFund/2020/ImplicationsPetroleumFundMay2020en.pdf

Scheiner, Charles. 2021. Timor-Leste: 2021 economic survey: The end of petroleum income. *Asia-Pacific Policy Studies* Vol. 8, Issue 2. https://doi.org/10.1002/app5.333

Scheiner, Charles. 2022a. The Resource Curse in Timor-Leste. Presentation to the 2022 Conference of the Association for Asian Studies, March. https://www.laohamutuk.org/pres.htm#AAS2022

Scheiner, Charles. 2022b. La maldición de los recursos en Timor-Leste. *Estudios de Asia y África*, Vol. 57 no. 3. https://doi.org/10.24201/eaa.v57i3.2785

Timor-Leste Extractive Industries Transparency Initiative. 2022. https://tleiti.mpm.gov.tl/ or https://www.laohamutuk.org/Oil/EITI/10EITIindex.htm

TimorGAP, E.P. 2022. *Annual Reports*. https://www.laohamutuk.org/Oil/PetRegime/NOC/10Petronatil.htm#docs

Transparency International. 2022. Corruption Perceptions Index 2021. https://www.transparency.org/en/cpi/2021/index/tls

Tribunal de Recurso, RDTL. 2021a. Relatório e Parecer Sobre a Conta Geral do Estado - 2020 [Report and Opinion on the General State Accounts for 2020]. https://www.laohamutuk.org/econ/OGE20/exec/RPCGE-2020.pdf

Tribunal de Recurso, RDTL. 2021b. Relatório de Auditoria N.º 3/2021 - Auditoria de Conformidade ao Fornecimento de Combustíveis para as Centrais Elétricas de Hera e de Betano – Anos 2013 a 2019. [Audit report No. 3/2021 - Compliance Audit of Fuel Procurement for the Hera and Betano Power Plants - 2013-2019]. https://www.tribunais.tl/wp-content/uploads/2021/12/2021_03_RELATORIO_COMBUSTIVEIS.pdf

United Nations Development Program. 2011. *Timor-Leste Human Development Report 2011: Managing natural resources for human development*. https://www.laohamutuk.org/econ/HDI10/TLHDR2011En.pdf

United Nations Development Program. 2018*. National Human Development Report 2018: Timor-Leste.* https://hdr.undp.org/en/content/national-human-development-report-2018-timor-leste

United Nations Development Program. 2020*. Human development report 2020.* https://hdr.undp.org/content/human-development-report-2020

U.S. Energy Information Administration. 2022a. *Annual Energy Outlook 2022*. US EIA. https://www.eia.gov/forecasts/aeo/

U.S. Energy Information Administration. 2022b. Short-term energy outlook. August. US EIA. https://www.eia.gov/outlooks/steo/

V-Dem Institute. 2022. Democracy Report 2022. http://v-dem.net/democracy_reports.html

Westwood Global Energy. 2019. *The state of exploration 2019.* https://www.westwoodenergy.com/news/the-state-of-exploration-2019

World Bank. 2021. *Timor-Leste - Public Expenditure Review: Changing Course - Towards Better and More Sustainable Spending.* https://www.worldbank.org/en/country/timor-leste/publication/timor-leste-public-expenditure-review-changing-course-towards-better-and-more-sustainable-spending

World Bank. 2022. *Timor-Leste Economic Report: Investing in the Next Generation*. June. https://openknowledge.worldbank.org/bitstream/handle/10986/37604/P177351056 8a060db09183035b08e384fec.pdf