

# Timor-Leste: 2021 economic survey

By Charles Scheiner<sup>1</sup>

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## Abstract

As Timor-Leste nears the end of its petroleum-exporting era, the transition to a sustainable economy has become even more challenging due to partisan competition and the pandemic. This article describes its current economic context, including livelihoods, GDP and trade, which have worsened in recent years. After a brief discussion of the political situation and the impacts of Covid-19, it explores the expenditure and income in recent state budgets, with particular focus on dependency on oil and gas revenues and their investments, which pay for 80% of state spending and may run out within a decade. It then assesses revenue prospects from current and future oil and gas activities, including Greater Sunrise and the planned Tasi Mane petroleum infrastructure project. This article attempts to fill some gaps in published research by using information from primary sources, Timorese analysts, and the author's two decades of observations, engagement and interviews in Timor-Leste, analysing policies based on evidence and avoiding ideological or political biases other than for economic and social justice.

In 2002, Timor-Leste emerged from centuries of autocratic foreign rule and violent Indonesian occupation. Its people have created a vibrant, peaceful society and a democratic government under the rule of law. Economically, they have evolved from depending on foreign aid, through exporting oil and gas, to living from the returns from investing revenues received from extracting non-renewable resource.

The parties in power have changed three times since 2017, and the current governing coalition was formed May in 2020. Although the changes were nonviolent and followed legal processes, they disrupted normal governance. The state budgets for 2017, 2018 and 2020 were enacted many months late, curtailing state spending on which much of the country's economy depends.

Petroleum revenues have drastically declined, and other reserves will probably not produce revenues comparable to the US\$20 billion already received. This heightens Timor-Leste's major challenges: import dependency, unemployment, lack of economic diversification, poverty,

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<sup>1</sup> Charles Scheiner is a researcher at La'o Hamutuk (the Timor-Leste Institute for Development Monitoring and Analysis), an independent Timor-Leste policy research and advocacy NGO.

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inequality, inadequate public services and COVID-19 (Neves 2016, 2018; Cardoso 2019; Lundahl 2020 chapter 6).

As the term “resource curse” means different things depending on the writer’s perspective, this article will not use it. However, Timor-Leste’s overwhelming reliance on revenues from exporting oil and gas for the last 15 years has influenced most leaders’ thinking: many approach every problem by spending extractive assets, see money as the solution to any challenge, and are unable or unwilling to realistically plan for the future. As a result, agriculture and other productive economic sectors have been neglected, and little has been done to strengthen the country’s most valuable resource – its people.

Many international academic writers have looked at the implications of petroleum money in Timor-Leste (John 2020; Lundahl 2019, 2020), but few use primary sources or recognize the country’s specific historic, cultural and economic contexts. Reports and data from International Financial Institutions (World Bank 2020a, 2020b; IMF 2019; ADB 2020a, 2020b) are frequently cited, but the information in them is often dated, out of context, shoe-horned into global methodologies or filtered through free-market ideology. Furthermore, some government and donor agencies are reluctant to collect and/or publish information which may not reflect well on their work – no poverty or labour market studies have been released for more than five years.

Timor-Leste-based NGOs (Oxfam 2019; La’o Hamutuk 2008, 2015, 2016a, 2016b, 2018, 2020b, 2020c, 2021d; Fundasaun Mahein 2021a, 2021b) usually understand societal and local issues better, but write for non-academic readers, as do bloggers (Cardoso 2019, 2020, 2021; Guterres 2018; Neves 2019, 2020) and other commentators. The many lively, well-informed, debates among Timorese intellectuals on these issues, often over coffee or social media, are overlooked by most academic research. This paper will rely primarily on local sources, although international analyses provide useful perspectives.

## **Economic overview**

Timor-Leste entered nationhood in 2002 with a heavy burden. During 450 years of colonialism and occupation, little had been done to educate its people or develop a sustainable economy. A generation of Indonesian occupation and war had inflicted incalculable physical, cultural and societal damage. When Indonesia destroyed most of the buildings and infrastructure in 1999, and Indonesian teachers, bureaucrats and business people moved back to their country, the victors in the struggle for independence created something few of them had ever lived in: a democratic state under rule of law, where the government listens to and provides services for its people. They also needed to build infrastructure, invent a legal system and develop the economy.

Timorese people’s civil, political, cultural and social rights are infinitely better than they were before 1999. Economic rights, not so much. More than 40% of the population live in poverty, unable to afford daily necessities (DGE 2016). Timorese children suffer more severe malnutrition than their neighbours in Southeast Asia and the Pacific (slightly worse than PNG). More than half of children under age five are stunted, third worst in the world (FAO 2021; von Grebmer 2020).

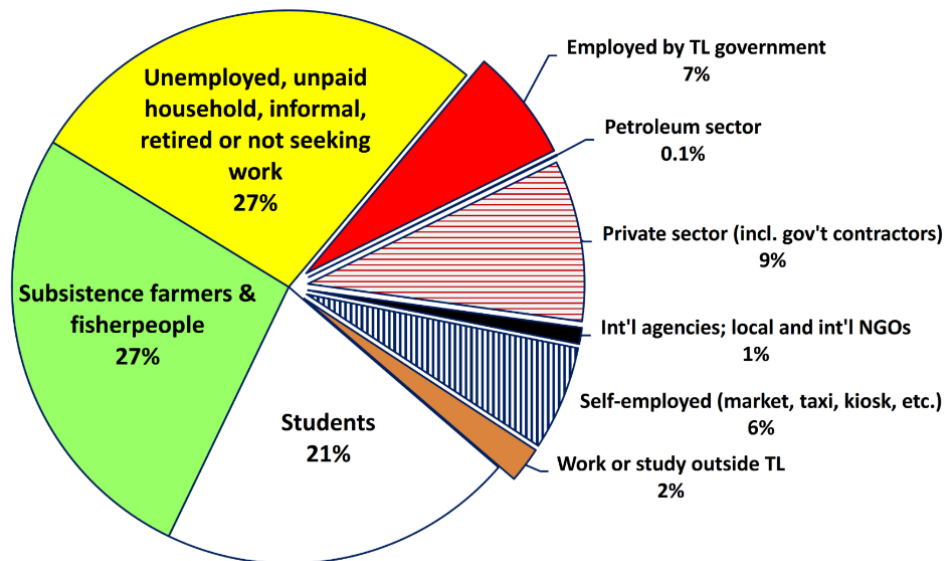
**Figure 1: The young majority expects their elders to lay good foundations for their lives**



This young country has a young population; more than half of its people were born after the Indonesian occupation ended 21 years ago. Most of them live in rural areas and are growing up with inadequate food, poor education, substandard health care and few employment opportunities. Although some, especially the brightest kids from middle class families, have access to much better education and jobs than their parents did, most do not have that chance – even though the country’s future depends on them.

Timor-Leste has 1.3 million people, and about two-thirds are working-age, defined as 15-64.

**Figure 2: Principal livelihoods of the Timorese working-age population**



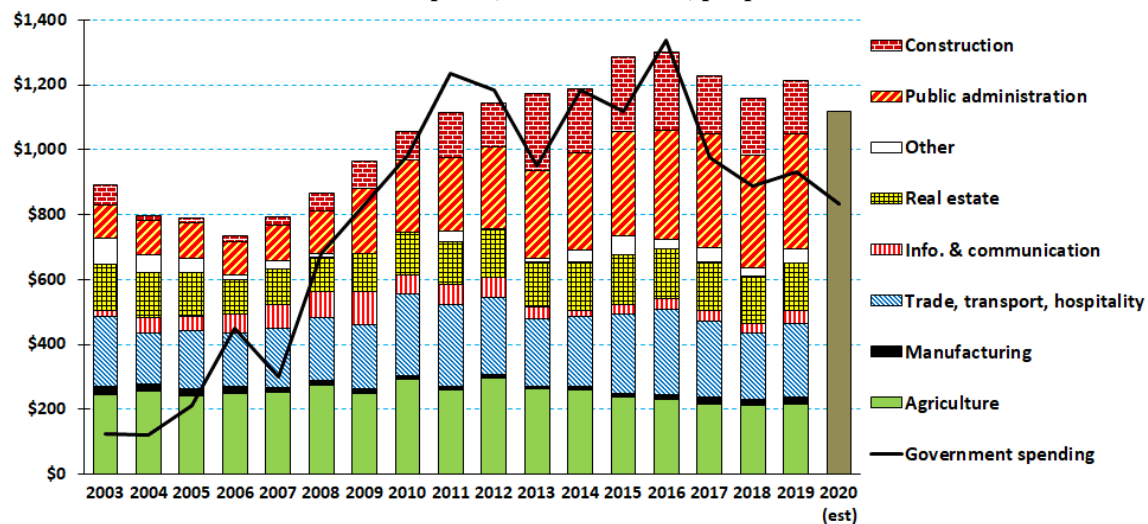
Source: *La'o Hamutuk 2021e*, compiled from *DGE 2017*, *DGE 2019*, *MoF 2018*, and their own research.

According to La’o Hamutuk’s analysis, only about a quarter of the 820,000 working-age people work in the formal economy. The rest are subsistence farmers or fisherpeople (although they may sell a small amount of surplus), not being paid for work, or students. Of those who earn mostly cash income, roughly equal numbers work for the government, the private sector, and very small family businesses (La’o Hamutuk 2021e).

About two-thirds of households in Timor-Leste engage in farming, even if they also do other work. Their agricultural holdings average 1.5 hectares (DGE 2020b).

Because economists and office-holders like to think about GDP growth, I’ll discuss it here. However, it’s not the most appropriate indicator, because it counts dollars, not people, and undercounts the poor, especially informal producers.<sup>2</sup> Figure 3 shows the evolution of the “non-oil” component of Timor-Leste’s nominal GDP, adjusted for population and local inflation.

**Figure 3: Sectoral contributions to ‘non-oil’ GDP per capita<sup>3</sup>**  
Current prices, 2015 U.S. dollars, per person



Sources: DGE 2020a; MoF 2020b book 1, table 3.

All the growth in the last decade is in the top two segments, construction and public administration, which come almost entirely from oil-funded state spending. The black line shows how much the government spent each year, and its decline since 2016 is reflected in the declining GDP.<sup>4</sup> The bar for 2020 is a government projection of negative 6% GDP growth caused by the late budget and Covid-19 prevention measures, but no sectoral breakdown is yet available.

After adjusting for inflation and population growth, the productive sectors of agriculture and manufacturing produce less output than they did at the time of independence.

<sup>2</sup> Although GDP methodology assigns monetary value to subsistence production and land ownership (imputed rent), but not to unpaid household work, it gives poor people’s reality far less weight than that of affluent people. For example, if one of the richest families in Timor-Leste increased their ‘production’ by 10% (say, by \$100,000), that would add as much to the GDP as 200 low-income families doubling their productive output (from \$500 to \$1,000 each).

<sup>3</sup> The contribution of the oil and gas sector to Timor-Leste’s GDP has been difficult to assess, as its activities are conducted by overseas companies, in an offshore area of disputed sovereignty until 2019. It’s also unclear whether conversion of nonrenewable resource assets into financial assets should be considered “production.” What is clear is that petroleum activities were much larger than “non-oil” GDP in 2004-2014 and have dropped since then.

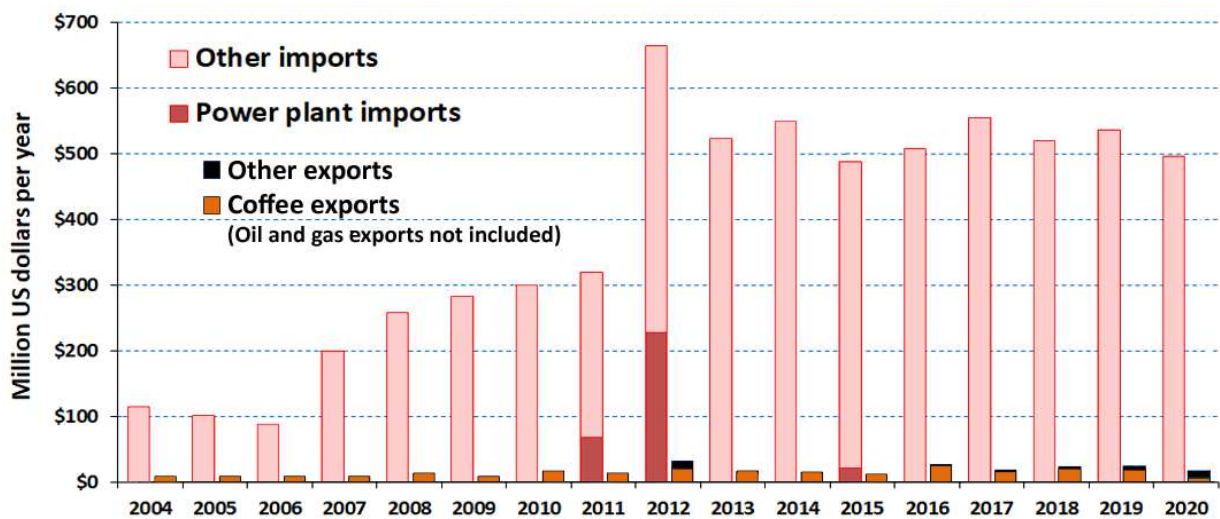
<sup>4</sup> The decline in spending is due to a variety of factors: political instability (resulting in late budget enactment), reduced efficiency and waste, lower prices for imported fuel, and completed capital spending on large electricity, port and road infrastructure projects (with little spent on maintenance).

Private sector employment by businesses is falling, with about 15% fewer jobs in 2018 than there were in 2014 (DGE 2019). In the same period, the working-age population increased by more than 10% (DGE 2017).

Many people talk up the jobs that will be created by anticipated large projects supported by foreign investors, including the Heineken brewery in Hera, the Bolloré container port in Tibar, the Australian TL Cement mine and factory in Baucau, the Pelican Paradise Resort in Tasi Tolu and the Tasi Mane petroleum Project on the south coast. However, all together they will employ fewer people after construction is finished than the 4,000 who enter the working age population every two months.<sup>5</sup> Heineken is the only one of these which has been built, and its closure may be imminent (Lusa 2021).

One consequence of the small local productive economy is that the country relies heavily on imports for the daily needs of its people and institutions.

**Figure 4: Balance of goods trade (excluding oil and gas exports)**



Source: DGE 2021a.

Timor-Leste’s trade balance has been broadly consistent for the last eight years. Every year, the country imports about \$500 million worth of goods, mostly from Indonesia and China. About 2% of goods imports (\$11 million annually) come from Australia.

Non-oil exports are usually around \$20 million per year. During 2013-2019, 90% of them were coffee.

The deficit in services trade has averaged about \$350 million per year, although it was \$80 million lower in 2020 due to reduced travel and construction. From 2017-2019, Timor-Leste’s balance of payments deficit (excluding oil and investment income) averaged about \$940 million/year, although it dropped to \$750 million in 2020, due to reduced and delayed state expenditures. As a rough estimate, at least half of the money leaving the country is government purchases of goods and services from foreign providers (BCTL 2020).

Today, Timor-Leste covers its trade deficit with money from petroleum revenues and investment returns, which is not sustainable, as discussed below. When that money runs out, the country will not be able to pay for as many imports and the trade deficit will decline. The impact on families will be devastating if local food production has not markedly improved.

<sup>5</sup> Heineken employed 125 people before layoffs started (Lusa 2021). According to proponents’ optimistic estimates, Tibar port will directly employ 200 workers during operation (Advisian 2017, p. 314), TL Cement 700 (WorleyParsons 2017, p. 4), Pelican Paradise 1,500 (ASPEC 2018, p. 4-18), and Tasi Mane 730 (ACIL Allen Consulting 2016, pp. iii-v).

Because Timor-Leste uses the U.S. dollar as its official currency, it has no control over exchange rates. Between 2011 and 2014, annual inflation was around 10%, as rising government spending drove prices up (DGE 2021b). About six years ago, government spending stabilized and became more efficient, and since mid-2014 inflation has averaged about 0.6% per year. Nevertheless, prices in Timor-Leste are about 25% higher than in Indonesia, the source of many goods sold in Timor-Leste (World Bank 2021, NY.GDP.MKTP.PP.CD and NY.GDP.MKTP.PP.KD).

People in the capital are much better off than those in the rest of the country, although only a handful are wealthy by international standards. A 2016 Demographic and Health Survey which tabulated households' wealth showed that 60% of the households in Dili have more assets than are owned by 4/5 of Timorese nationwide. Although only 7% of Dili families are in poverty, more than half of the families in the rest of the country are (DGE 2018).

Thousands of young Timorese go overseas to work, mostly in the U.K., as well as in government-organized programs in Australia and South Korea. They send home about \$100 million per year in remittances, a smaller fraction of GDP than in 57 other countries (World Bank 2021, BX.TRF.PWKR.CD.DT). Overseas workers acquire knowledge and work habits from their exposure to the larger world, while improving the living standards of their families. However, some people (including this author) believe that Timor-Leste would be better served if these workers came home after a few years and used their skills to develop Timor-Leste's own society and economy, rather than just sending part of the wages they get for supporting overseas businesses. Timorese people born since 2002 are no longer automatically entitled to Portuguese passports, which facilitated working in Europe and the pre-Brexit UK (McWilliam 2019), and this, combined with travel impacts of Covid-19, may reduce remittances in the future.

### **Political situation and Covid-19 response**

In early 2015, Prime Minister Xanana Gusmão resigned. He had created the CNRT (*Conselho Nacional de Reconstrução do Timor*) political party, served as Prime Minister for eight years and established the principal policy directions for the country (RDTL 2011). He chose his successor from the opposition party FRETILIN (*Frente Revolucionária de Timor-Leste Independente*), Dr Rui Maria Araujo, and established a unity government which included all political parties.

The unity dissolved in the 2017 Parliamentary elections. FRETILIN got the most votes and formed a government under P.M. Mari Alkatiri, but its Parliamentary coalition did not last, and an early election was called in 2018. Three opposition parties -- CNRT, PLP (*Partido Libertação Popular*) and KHUNTO (*Kmanek Haburas Unidade Nasional Timor Oan*) -- formed a pre-election coalition dominated by CNRT which won 34 of the 65 seats in Parliament and chose PLP's Taur Matan Ruak as Prime Minister. FRETILIN, with 23 seats, went into opposition.

The new government's program (RDTL 2018) devoted 30 pages to economic development, of which only five are about petroleum, the primary force in Timor-Leste's current economy. However, the government quickly weakened financial and environmental protection in the petroleum sector, borrowed money from the sovereign wealth fund (Petroleum Fund) for the Greater Sunrise project, greatly increased subsidies for TimorGAP (the state-owned oil company) and moved ahead with Tasi Mane and other petroleum exploration and processing projects.

Political instability hampered state functionality from mid-2017 until 2020, resulting in delayed state budgets and consequent economic impacts. In nearly three years between the 2017 elections and the government restructure in early 2020, Parliament enacted a total of only ten laws.

In late 2019, CNRT decided to enforce its will over the Prime Minister by opposing his proposed 2020 budget. Taur Matan Ruak resigned, but his resignation was not accepted by the President. Many people felt that the impending threat from Covid-19 required a functioning administration and did not want another early election. In May 2020, FRETILIN joined PLP and KHUNTO to form a different

governing coalition, retaining Taur Matan Ruak as Prime Minister. CNRT's 21 MPs became the opposition and the party told its Ministers to resign.

The restructured government is the most functional and stable in three years, although CNRT calls it "de facto" and often walks out of Parliament. During 2020, Parliament has enacted 15 laws (two state budgets, two transfers from the Petroleum Fund, an anti-corruption law, a civil protection law and nine monthly authorizations of the State of Emergency). The next Presidential election will be in 2022, with the Parliamentary election following in 2023. The current coalition is likely to last at least until then.

In April 2020, as Covid-19 spread around the world, Timor-Leste's President and Parliament declared a State of Emergency, placing restrictions on international and domestic travel, requiring people to quarantine when entering the country, and limiting public gatherings. The State of Emergency has been renewed monthly at least until June 2021 (La'o Hamutuk 2021c).

In August 2020, the government adopted an Economic Recovery Plan (RDTL 2020) to deal with the economic impacts of pandemic prevention on the population. The plan was written by Rui Gomes, an independent who served as Finance Minister in FRETILIN's 2017 government and was reappointed to that position in September 2020. It envisions diversifying the economy away from petroleum and offers an updated, more realistic, more appropriate and more equitable vision than the 2011 Strategic Development Plan (RDTL 2011). Although there has been no official review, very few of the 2011 SDP's targets have been met.

As of late March 2021, nobody in Timor-Leste had died<sup>6</sup> from Covid-19. Forty-four cases of the disease were identified during 2020, all in people who had just entered the country. Unfortunately, Covid-19 began to spread locally in February 2021 and escalated rapidly in April; As of 4 May 2,653 people had tested positive, mostly in Dili, half of those cases were still active, and four people have died. Although contact tracing sorted them into about 50 "clusters" until recently, there is now community spread. Travel restrictions (*cerca sanitária* or health fences) and "lockdown" directives to stay home whenever possible apply in the municipalities with the most cases (RDTL 2021), and Timor-Leste enacted a supplementary budget to deal with the economic hardships of unexpectedly severe prevention measures.

Compounding the country's challenges, the most severe flooding in decades occurred on Easter Sunday, killing more than 40 people and forcing tens of thousands into emergency shelters. In addition to dealing with the urgency of immediate relief, many are re-evaluating the effectiveness of planning and prevention mechanisms.

## **Public finances**

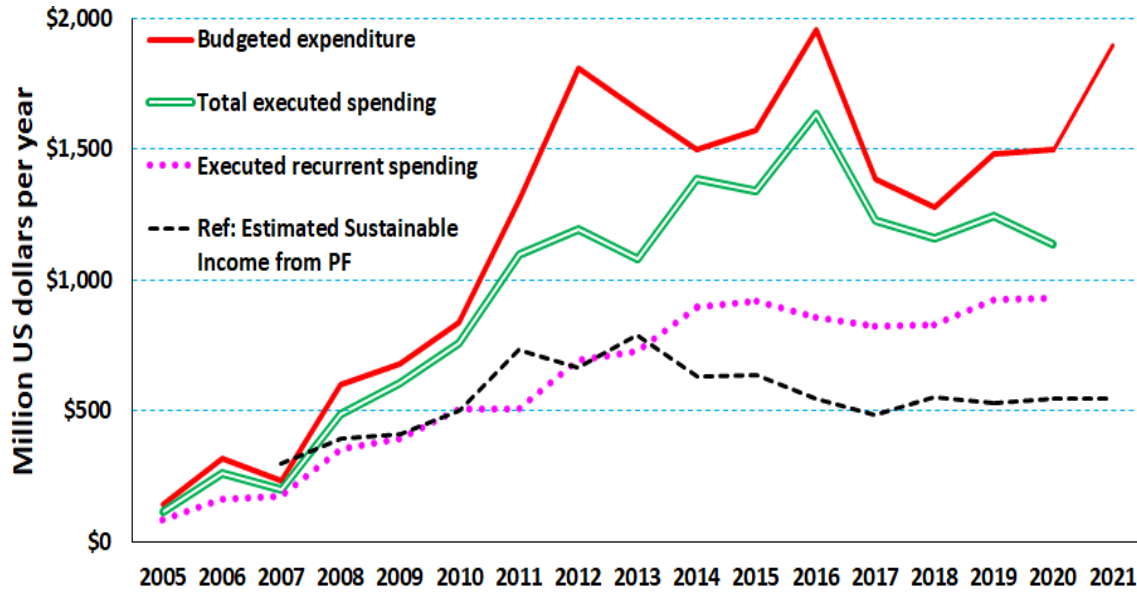
As shown in Figure 3 and Figure 5, government spending is the principal driver of Timor-Leste's entire economy. State expenditures grew very quickly from 2008 to 2012, and climbed more slowly until 2016. Since then, they have declined, partly due to political problems with enacting budgets on time, and partly because some major infrastructure projects, such as the national electricity system, were mostly completed. The 2021 budget envisions a big increase, but it remains to be seen how much will be executed.<sup>7</sup>

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<sup>6</sup> In Timor-Leste's larger neighbors, Covid-19 has taken 46,000 Indonesian and 900 Australian lives. At the time of writing, the disease was spreading rapidly in Papua New Guinea, where it has killed 115 people.

<sup>7</sup> The "2021 budget" discussed in this paper is the one enacted in December 2020, not the rectification approved in May 2021.

**Figure 5: Budgeted and executed state spending**



Source: MoF 2018, 2020a, 2020b and earlier years, Budget Book 1.

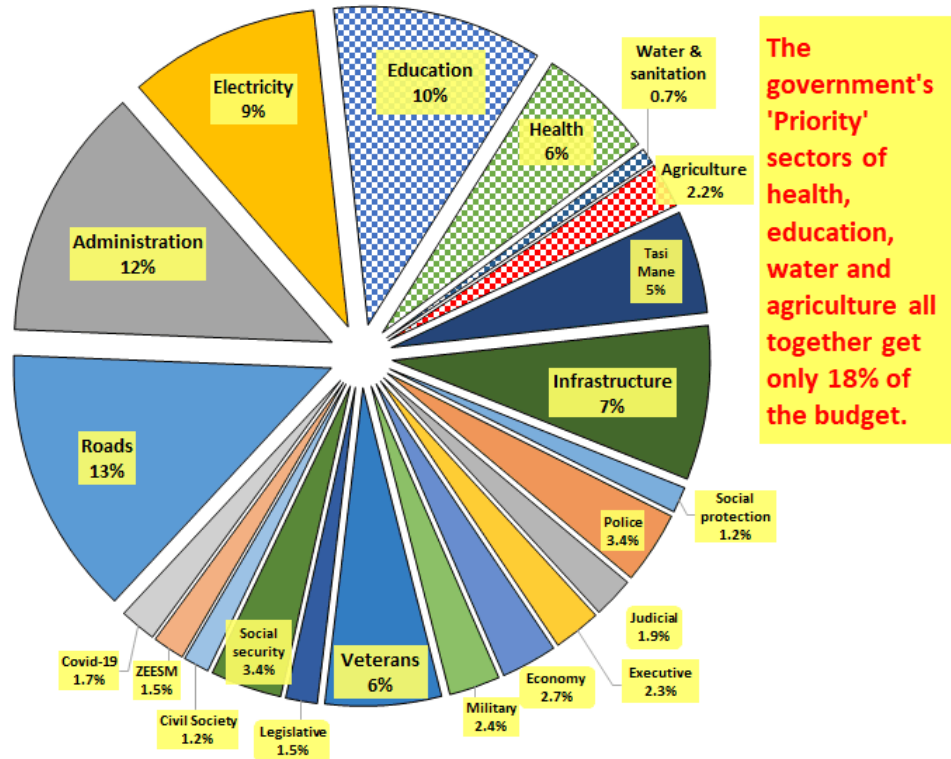
The solid red line shows how much was budgeted for each year, and the double green line shows how much was actually spent. The dotted purple line is recurrent spending – personnel, supplies, and day-to-day government operations. It stayed flat even as total spending dropped.

Timor-Leste deposits its oil and gas revenues into a sovereign wealth fund – the Petroleum Fund (PF) – which is invested overseas; withdrawals finance five-sixths of the annual state budget. The black dashed line is the “Estimated Sustainable Income” (ESI), the amount of money which could be withdrawn from the PF each year without depleting the Fund’s long-term balance (see Figure 9). Although the ESI was originally intended as a guideline for the entire budget, excess withdrawals were later justified as “front-loading” for one-off capital projects. However, recurrent spending alone has been far above ESI since 2014.

In December 2020, Timor-Leste enacted its \$1.9 billion state budget for 2021, the second-largest in the country’s history and the first one in four years to be enacted on time (see previous political discussion). Figure 6 is a sectoral analysis of its appropriations.<sup>8</sup>

<sup>8</sup> This graph represents what the money is allocated for, not which ministry it goes to. For example, education includes two ministries, educational institutions, scholarships, education-related infrastructure, and money allocated to municipality and Oecusse administrations for education.

**Figure 6: Appropriations in the 2021 State Budget**



Source: MoF 2020b Books 2, 3a, 3c and 4.

For at least five years, governments led by various parties and coalitions have claimed that their priorities are health, education, water supply and agriculture (MoF 2020c, slide 9), but budgetary allocations have not matched this promise. In 2021, 18% of appropriations will go to these sectors, which is a little better than in past years. However, it is far below international good practice for developing countries, which is that at least 28% of state spending should go to education and health (UNDP 2011, p. 122).

Timor-Leste is a young country, and 38% of its people are school age (5-19), more than twice the percentage in Australia. However, Australia allocates more than 13% of government spending to education (Edwards 2019), compared with 10% in Timor-Leste.<sup>9</sup> According to World Bank data, Timor-Leste allocated 8% of its state budget to education in recent years, compared with 20% in Indonesia and 16% among all Least Developed Countries (World Bank 2021, SE.XPD.TOTL.GB.ZS). Timor-Leste's spending for health, water and education infrastructure in 2011-2018 was so low that the World Bank rounded it off to zero (World Bank 2020b, p. 34).

Agriculture, which is the principal livelihood of about 2/3 of Timorese families and produces essential food which could reduce both malnutrition and the trade deficit, gets about 2% of public spending. This is significantly more than in past budgets, but still far below what is needed. Farming is hard work, and many Timorese people have internalized Portuguese colonial values that farming is "low-class", to be avoided when urban government or white-collar jobs are available. As a result, people move from the country to cities seeking jobs, although many maintain connections with their rural roots. It is difficult for Timorese agriculture to compete in the international market (except for

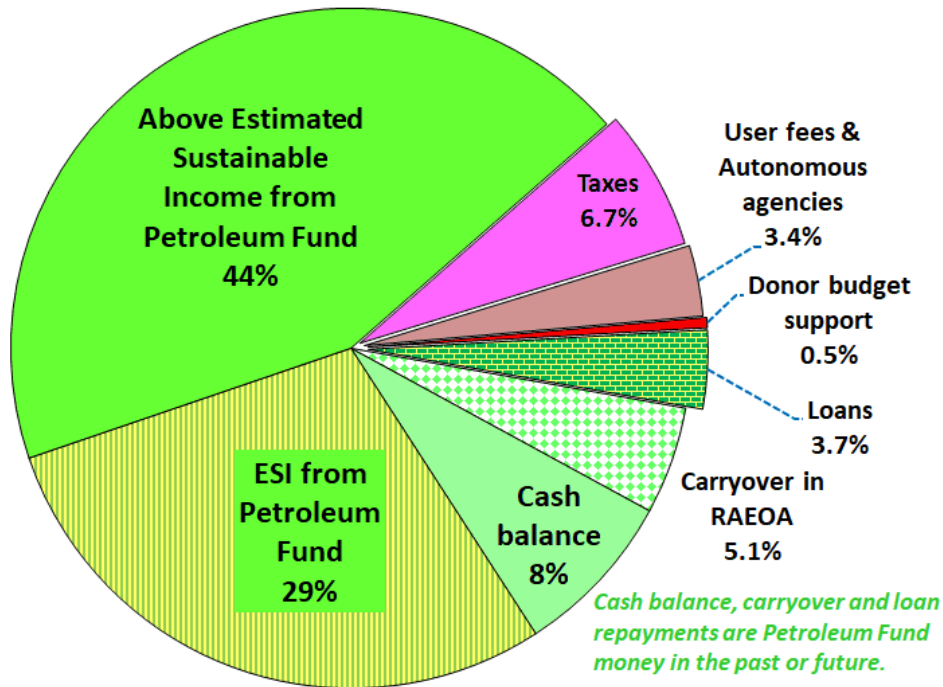
<sup>9</sup> Including state and local governments in Australia. In Timor-Leste, all local government expenditure comes from the national budget.

niche products like high-quality coffee, spices or organic produce), but it can replace imported food within the country.<sup>10</sup>

Spending more money on neglected sectors will not solve everything. The negative impacts from inadequate funding in many “priority” sectors are compounded by lack of effective planning and execution, shortages of well-educated and experienced personnel, and suboptimal practices learned from international advisors. In addition, the government sometimes reduces its involvement because it believes that development partners are covering a particular need.

To pay for all its spending, the annual state budget uses domestic revenues (taxes and user fees), direct budget support from donors, and money borrowed from international financial institutions. However, all together these cover less than 15% of the desired expenditure, and the remaining “non-oil fiscal deficit” is covered by transferring money from the Petroleum Fund.

**Figure 7: Revenues in the 2021 State Budget, totalling \$1.9 billion**



Source: MoF 2020b Budget Book 1.

The five green-shaded slices in Figure 7 represent money withdrawn from the Petroleum Fund. The two largest ones, the Estimated Sustainable Income (ESI) and the excess above ESI, will be withdrawn in 2021 (see below). The cash balance and carryover are money that mostly came from the PF in previous years but was not spent; about 85% of the loans will be repaid with Petroleum Fund money. All together, the Petroleum Fund (PF) is expected to pay for 86% of 2021 budget appropriations.

Since the first withdrawal was made in 2007, the PF has paid for 86.2% of all state spending, and actual domestic revenues have never covered more than one-sixth of executed spending.

Some domestic revenues are misleading. For example, about 14% of domestic revenues come from electricity sales by the Ministry of Public Works, which runs at a loss. Between 2010 and 2020, Timor-Leste spent \$2 billion to build and operate its electricity system. During the same period, total electricity revenues were \$254 million, about one-third of the fuel costs alone.

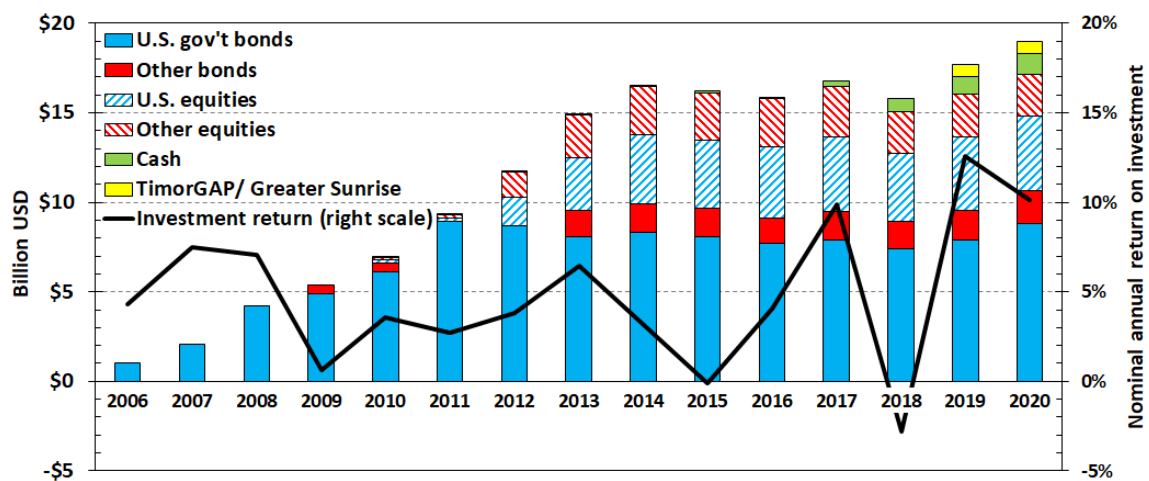
<sup>10</sup> In recent years, Timor-Leste has imported about \$150 million worth of food products each year, about ten times as much as the value of the coffee it exports (DGE 2021).

## Petroleum: revenues, dependency and the Petroleum Fund

In 2005, Timor-Leste enacted far-seeing legislation to establish its Petroleum Fund. The PF was to receive all oil and gas income and invest it in secure overseas financial instruments, with the returns reinvested in the PF. The annually Estimated Sustainable Income (ESI) is a guideline of what can be withdrawn without depleting the PF's long-term balance; ESI is 3% of the total petroleum wealth: the current balance plus a prudent, inflation-adjusted (NPV) estimate of future oil and gas revenues from projects with approved development plans.<sup>11</sup> Withdrawals, which could only exceed ESI with an explicit justification, would support the state budget, and the PF would "benefit current and future generations" (La'o Hamutuk 2021a).

Since its establishment, the Petroleum Fund has received \$23.1 billion in oil income and \$8.4 billion in returns on its investments. \$12.5 billion has been withdrawn to pay for state expenditures, leaving \$19.0 billion in the Fund at the end of 2020.

**Figure 8: How the Petroleum Fund is invested**



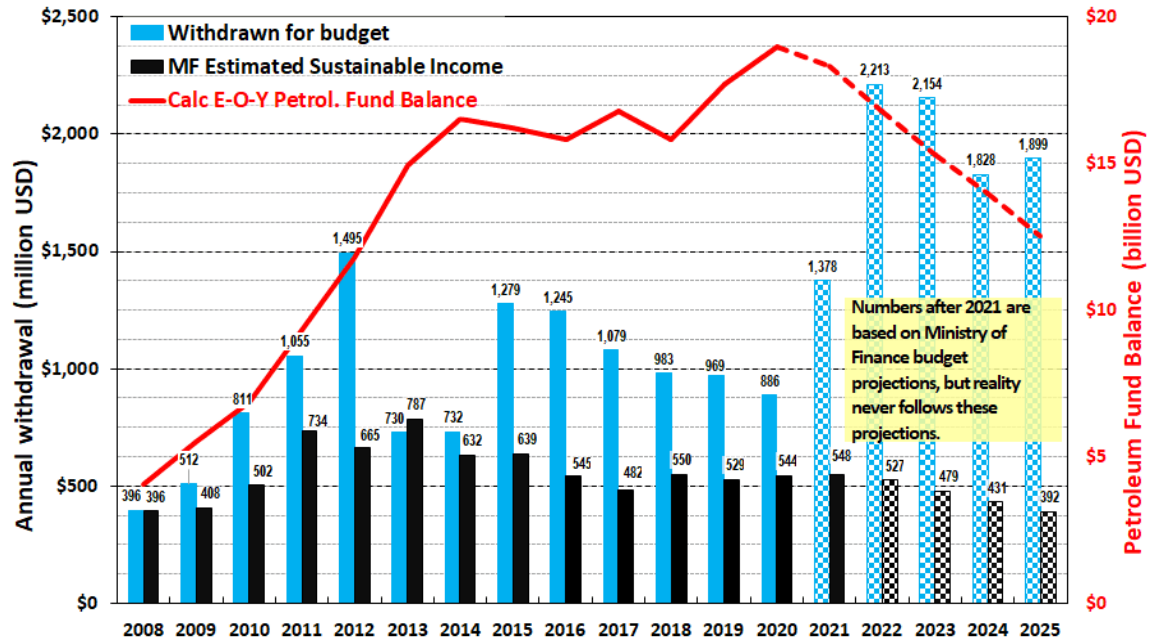
Source: BCTL 2021.

Figure 8 shows that the PF gradually diversified its investment portfolio from U.S. government bonds to other countries' bonds, then to stocks, and, since 2019, into petroleum projects in Timor-Leste. Although its all-bonds portfolio in 2009 made it the only sovereign wealth fund in the world which didn't lose money during the global financial crisis, it now goes up and down with the global stock market.

As shown in Figure 9, PF withdrawals have exceeded ESI every year since 2009 except 2013, when much of the huge withdrawal in 2012 was not spent and was carried over. They total 63% more than ESI to date. Although changes in some laws have relaxed rules on governance and investment of the PF, the basic mechanism is largely intact, even if visions of long-term sustainability will not be realized (Scheiner 2020).

<sup>11</sup> The only approved plans are for Bayu-Undan and Kitan. Sunrise and other prospective fields are not yet included in the ESI.

**Figure 9: Historic and planned withdrawals from the Petroleum Fund<sup>12</sup>**



Source: MoF 2020b - Book 1 and Budget law; BCTL 2021.

The red line in Figure 9 is the end-of-year balance in the PF, with Ministry of Finance projections from 2021 on. The bars are the withdrawals during each year, with the left (blue) bars representing the amount withdrawn, while the right (black) bars show what portion of this was the ESI. During the next five years, the government plans to withdraw four times the ESI, and the PF balance will begin to fall again.<sup>13</sup>

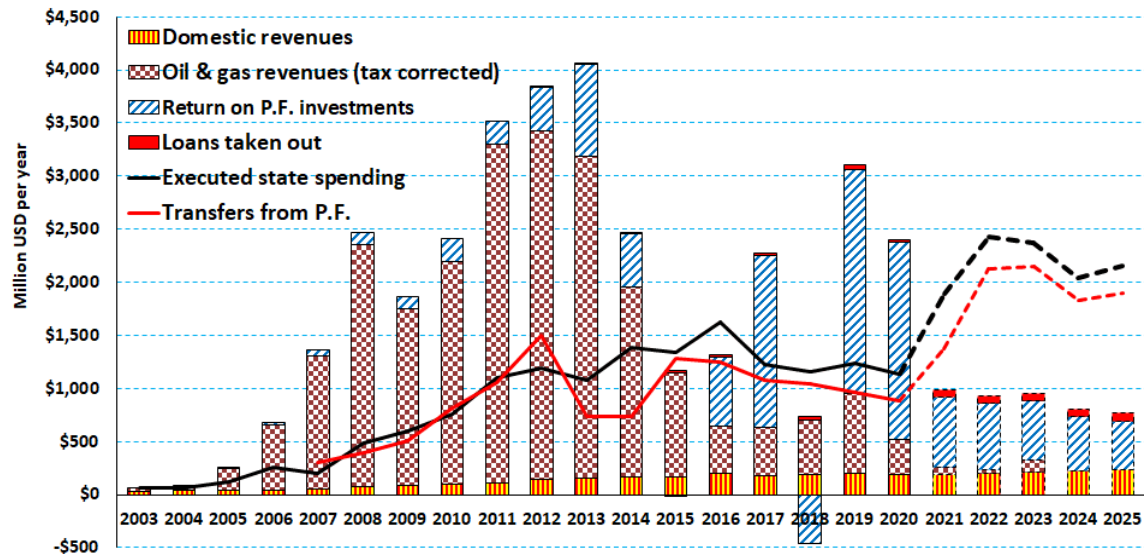
Withdrawals from the Petroleum Fund are decided by Timorese officials, but the amount of its income is not within their control. Although the Timorese people have achieved victories that international “experts” said were impossible, including national independence and the Timor Sea maritime boundary, no amount of determination, struggle or strategizing will be able to create new oil and gas reserves or control global oil prices and investment markets.

<sup>12</sup> The authorities consider the \$650 million loan from the PF to TimorGAP for Greater Sunrise (discussed below) as an investment, not a withdrawal. Therefore, its principal and accrued interest remain part of the PF balance.

<sup>13</sup> Government spending forecasts use a simplistic methodology, assuming that every recurrent budget line will go up 4% per year and that every infrastructure project will be built on time, as costed. Consequently, they are often very different from what actually occurs. Some anticipated projects (see Table 3 below) are not included in the budget, while others which are budgeted may never be built.

However, the projected PF withdrawals shown in Figure 9 are based on these forecasts, and they are what policy-makers and Parliamentarians have to work with.

**Figure 10: Income to the state (including the Petroleum Fund)**



Source: MoF 2020b Book 1.

The red-and-white checked segments show the oil and gas revenues Timor-Leste has received each year, which include royalties, profit oil taxes and corporate taxes.<sup>14</sup> About 93% of this came from the still-active Bayu-Undan offshore oil and gas field, with most of the rest from the Kitan oil field which produced from 2011 to 2015. Projections from 2021 on are from state budget documents, based on information provided by oil companies.

Although petroleum revenues rose rapidly until 2012, by 2020 they had dropped to one-tenth of their peak, and will continue to fall (see Figure 11). Timor-Leste has already received 99% of the revenue it is expected to receive from nearly-depleted Bayu-Undan, and the slight increase in 2023 is taxes on decommissioning that field.

The diagonally-striped blue segments are the returns from investing the Petroleum Fund. Some of this is dividends and interest which actually add money to the PF, but most of it is fluctuations in stock and bond prices and foreign exchange rates, which are only realized when the investment is sold. Although this fluctuates with the market (and was negative in 2015 and 2018), Timor-Leste has been very lucky so far.

The red and yellow vertically-striped segments are “domestic revenues” – taxes and user fees collected within Timor-Leste – and the small red segments are not actual revenue, but loans that must be repaid with interest in the future.

The solid black line is how much the state spent each year. When it is higher than the combined bar, as in 2015, 2016 and 2018, the state spent more than it took in. The Ministry of Finance expects this gap to increase rapidly from 2021 on, but a lot depends on the stock market and on the accuracy of their spending projections.

<sup>14</sup> In a few cases, collected revenues were returned to oil companies in subsequent years to repay over-assessed or over-estimated taxes. Withdrawals from the Petroleum Fund are decided by Timorese officials, but the amount of its income is not within their control. Although the Timorese people have achieved victories that international “experts” said were impossible, including national independence and the Timor Sea maritime boundary, no amount of determination, struggle or strategizing will be able to create new oil and gas reserves or control global oil prices and investment markets.

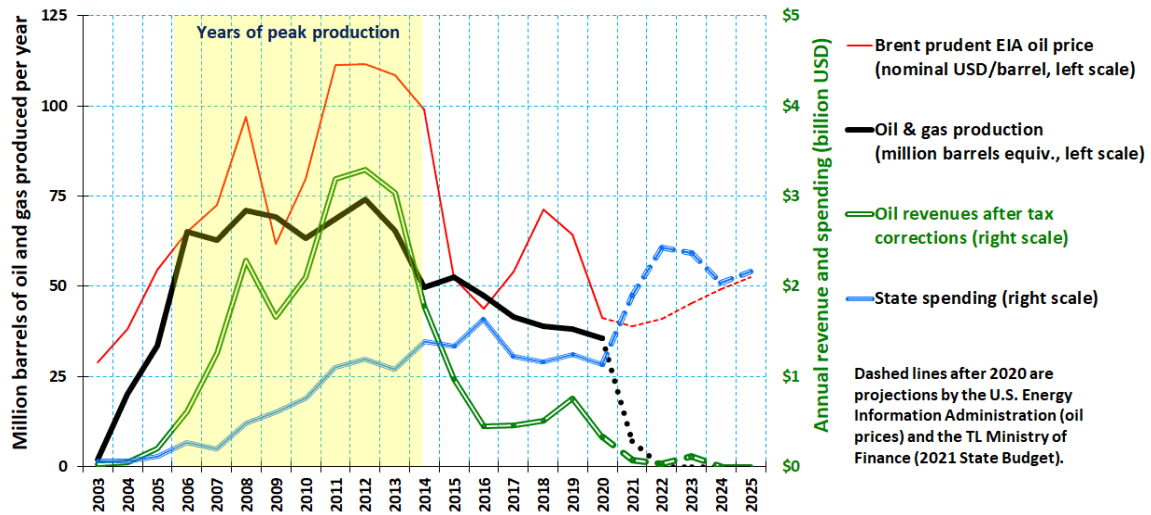
Figure 10 overcomes that anomaly by subtracting refunded taxes from the year in which they were collected, rather than the year in which they were returned.

The government projections used in Withdrawals from the Petroleum Fund are decided by Timorese officials, but the amount of its income is not within their control. Although the Timorese people have achieved victories that international “experts” said were impossible, including national independence and the Timor Sea maritime boundary, no amount of determination, struggle or strategizing will be able to create new oil and gas reserves or control global oil prices and investment markets.

Figure 10 only looks five years ahead. According to my estimates (Scheiner 2015), which were recently confirmed by government scenarios (MoF 2020b, Book 1, Figure 2) and the World Bank (World Bank 2020b, p. 36), the Petroleum Fund could be entirely empty within 10-15 years, and the diagonal segments will disappear, just as the checked ones are doing.

Timor-Leste hit the jackpot with Bayu-Undan, its largest oil and gas field, as shown in Figure 11. It was built in 2004-5 when oil prices (thin red line) and construction costs were low, and it produced when they were very high. For a while, it was the most profitable project in the history of ConocoPhillips.

**Figure 11: Petroleum prices, production and revenues**



Sources: ANPM 2021, EIA 2021, BCTL 2021, MoF 2020b.

The dashed and dotted lines in Figure 11 after 2020 are projections, but production will end soon as the Bayu-Undan reserve is almost empty. Most of the remaining resource is natural gas, which is extracted at a constant rate to match the capacity of the pipeline and LNG plant. When this is no longer possible, production will rapidly drop to zero.

The thick black line shows the amount of oil and gas produced each year, and the double green line shows how much money it generated for Timor-Leste. Money lagged production while Bayu-Undan capital costs were being repaid in 2004-2007. Since 2015, prices and production have been dropping, and revenues fell even faster as each barrel became more expensive to extract. By 2019, when the Maritime Boundary Treaty came into effect and Australia stopped siphoning off 10% of the revenues, there wasn't much oil and gas left.

Figure 11 doesn't anticipate the just-approved three new wells that Santos will drill at Bayu-Undan in mid-2021 to sip up the last puddles of petroleum. The \$235 million it will cost to drill them will be subtracted from revenues, so the 20 million barrels of additional production will not produce much income for Timor-Leste (Santos 2021b). They will, however, be good for Santos, providing gas to operate the Darwin liquefaction plant until the Australian Barossa field comes on line (Evans 2021a).

## Prospects for future petroleum revenue

Because Timor-Leste has been so dependent on oil and gas income, and because the other sectors of its economy are so small, many people think it is an oil-rich country. This is not correct.

**Table 1: Our neighbours have much more petroleum than we do<sup>15</sup>**

	Timor-Leste (70% Sunrise) <sup>16</sup>	Timor-Leste without Sunrise <sup>17</sup>	Australia (30% Sunrise)	Australia without Sunrise	Indonesia	Brunei
Proved oil and gas reserves at end of 2019 (million barrels equivalent = mmBOE)	540	32	16,400	16,200	10,900	2,500
Proved oil and gas reserves per person (BOE)	420	25	650	640	40	5,700

*Sources: BP 2020; Santos 2021a for Timor-Leste; Woodside 2020 for Sunrise.*

The Greater Sunrise project is discussed in more detail below. If it goes ahead, it will add to Timor-Leste’s reserves, although it will not be nearly as lucrative as Bayu-Undan has been. The logistics are more complex, and the global petroleum economy has changed. Oil (and, perhaps later, gas) will become less valuable, replaced by renewable energy as the world gets serious about averting further calamities from climate change.

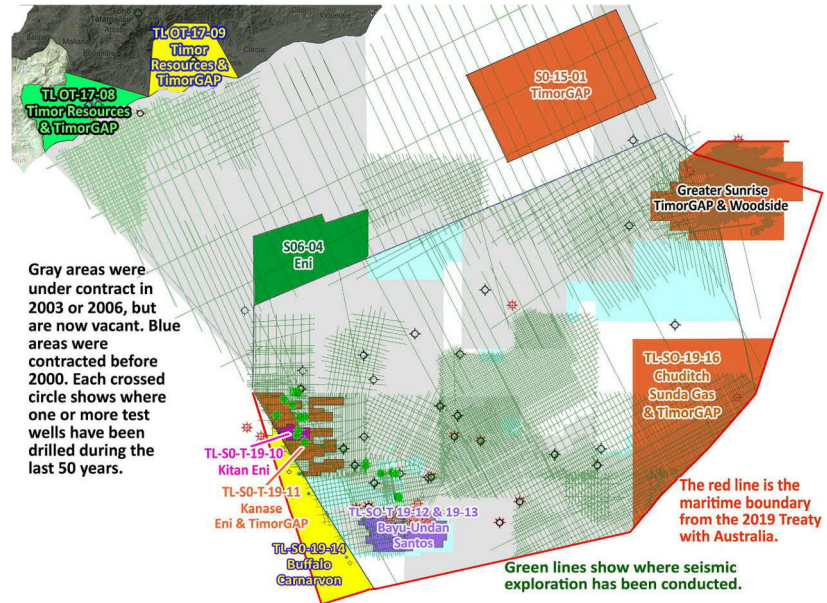
Timor-Leste is currently conducting a bidding round to attract new companies to explore in its onshore and offshore territory. Although the round has been promised for more than a decade, lack of interest caused its opening to be delayed until 2019, and bids will be accepted until October 2021 (La’o Hamutuk 2021d, Scheiner 2017; Ferreira 2021). However, as Figure 12 shows, the most geologically promising areas have long been explored by other companies, both seismically (green lines) and under previous contracts (light grey and blue areas). After unpromising results, the companies relinquished the areas. In the last bidding rounds in 2006, no company which had already explored in this area submitted a bid, and they know the geology better than anyone else.

<sup>15</sup> Quantities of oil and gas are combined as “barrels of oil equivalent” (BOE), by calculating the amount of gas with the same energy content as one barrel of oil. A million BOE is written “mmBOE”.

<sup>16</sup> Under the 2019 Maritime Boundary Treaty, Timor-Leste will get 70% of Sunrise upstream revenues (Australia gets the other 30%) if the gas is liquefied in Timor-Leste. If the LNG plant is in Australia, the split will be 80/20.

<sup>17</sup> Table 1 includes only Bayu-Undan, as no other fields have approved development plans.

**Figure 12: Past and present oil and gas exploration**



Source: ANPM 2018; La'o Hamutuk 2020b; contracts available at La'o Hamutuk 2021d.

The solid-color shapes are current oil and gas contracts. Most of the other areas are speculative, and the national oil company TimorGAP is a partner in nearly all of them. Even if they meet the most optimistic projections, none of these fields (with the possible exception of Sunrise) is likely to generate more than a few hundred million dollars for Timor-Leste.

**Table 2: Current and potential oil and gas projects at the start of 2021<sup>18</sup>**

Project	Operator (partners)	Oil reserve (mmBOE)	Gas reserve (mmBOE)	Possible future revenues (million USD)	Status
Bayu-Undan current wells	Santos 46% (SK E&S 25%, Inpex 11%, Eni 11%, JERA/Tokyo Gas 9%)	16	4	\$209	Produced 800 mmBOE since 2004, will end in 2022.
Bayu-Undan in fill wells	Santos 46% (SK E&S 25%, Inpex 11%, Eni 11%, JERA/Tokyo Gas 9%)	16	4	\$0	Three infill production wells will be drilled in mid-2021 and may extend production 1-2 years.
Greater Sunrise	Woodside 33% (TimorGAP 57%, Osaka Gas 10%)	226	854	unknown	Discovered in 1974. Seeking financing to proceed with development. High capital costs. TL will get 70% of state revenues.
Buffalo	Carnarvon 50% (Advance Energy 50%)	31	0	\$465	Produced 20 mmBOE in 1999-2005 for BHP and Australia. First new well planned for late 2021.
Onshore (Covalima & Manufahi)	Timor Resources 50% (TimorGAP 50%)	40	0	\$600	First test wells planned for July 2021.
Chuditch	SundaGas 50% (TimorGAP 25%, Baron Oil 25%)	0	588 <sup>19</sup>	unknown	Shell drilled a test well in 1998 but did not continue. New owners will decide by the end of 2022 whether to drill another.
Three other contract areas	TimorGAP and Eni	?	?	unlikely	Although these contracts were signed several years ago, not enough work has been done to estimate possible reserves. No wells are planned.

Sources: Santos 2021a, MoF 2020b and ANPM 2021 (Bayu-Undan current); Santos 2021b (Bayu-Undan infill); Woodside 2020 (Sunrise); Carnarvon 2020 (Buffalo); Lusa 2020 (Onshore); Baron 2021 (Chuditch).

The companies involved in the projects other than Sunrise and Bayu-Undan are very small with limited commercial experience. TimorGAP, SundaGas and Timor Resources have never managed an oil or gas project or drilled a well anywhere. Carnarvon has operated only one producing project, onshore in Thailand. These companies' reserve estimates are intended to attract investors, but companies like TimorGAP and Timor Resources, which are not traded on stock exchanges, risk nothing by exaggerating.

<sup>18</sup> Reserve estimates are in millions of barrels of oil equivalent (mmBOE), with 2C or 2P (50%) likelihood. Revenue estimates for Buffalo and onshore assume the government take will be \$15/barrel, which is what Timor-Leste received from Bayu-Undan in 2019-2020.

<sup>19</sup> The Chuditch estimate is very speculative, based on a single test well 23 years ago and seismic data. The partners acknowledge that it is not consistent with standard industry methodology, and were recently granted a one-year extension, until the end of 2022, to analyze existing data and decide whether to drill another test well.

In recent decades, about 10-20% of exploration wells drilled around the world find a reserve large enough to be worth developing. Timor-Leste has a slightly worse record: 90 exploration wells drilled since 1970 have found eight commercially viable fields. One which was considered non-viable was Chuditch, which has already been relinquished by at least two companies.

As Table 2 shows, the projects which are far enough along to estimate could, if all goes well, generate a total of about \$1.3 billion for Timor-Leste – as much as the country received in petroleum revenues during the last three months of 2012. It might finance the state budget for one year, but it's not a long-term solution to the nation's finances or economy.

### **Greater Sunrise and the Tasi Mane Project**

Woodside discovered the Greater Sunrise reserve in 1974, but its development was delayed by Indonesia's illegal occupation of Timor-Leste, and then by Australia's continuing occupation of the new country's maritime territory. After independence, Timor-Leste and the contract holders (Woodside, Shell, ConocoPhillips and Osaka Gas) couldn't agree on a development model. The companies calculated that a floating LNG plant or a pipeline to Darwin (using the soon-to-be-idle LNG plant currently serving Bayu-Undan), would be most profitable. But Timor-Leste insisted a pipeline to an LNG plant in Beçu on its south coast, so nothing happened (La'o Hamutuk 2008, 2018a).

After the Maritime Boundary Treaty was agreed in 2018, the companies were still reluctant to pipe the gas to Timor-Leste, so TimorGAP borrowed \$650 million from the Petroleum Fund and used the money to buy 57% participation in the Greater Sunrise joint venture. ConocoPhillips and Shell sold their shares, relieved to be paid for a non-productive asset. The loan is accruing interest at 4.5% per year and repayments will start in 2027, although it is unclear how TimorGAP will get the money.

In 2019, ConocoPhillips sold its majority shares of the Bayu-Undan joint venture and the Darwin LNG plant to the Australian gas company Santos, completely getting out of Timor-Leste. After Bayu-Undan production ends in a few years, Santos intends to use the existing Darwin LNG plant to process gas from Barossa, a developing field in Australian waters (Santos 2021c; Evans 2021b). Darwin LNG is no longer available for Sunrise, even if Timor-Leste or hypothetical investors wanted to explore options other than Beçu LNG.

Due to changes in the energy economy from Covid-19 and other factors, Woodside Petroleum, operator and 33% owner of the Sunrise project, revalued it at zero in July 2020 (Evans 2020).

The planned undersea gas pipeline from Greater Sunrise to an LNG plant and export terminal in Beçu are components of the proposed Tasi Mane project, which also includes:

- Port and petroleum logistics supply base in Suai
- Oil refinery in Betano, with two onshore oil pipelines between Suai and Betano
- 150-km highway between Suai and Beçu
- Airports in Suai and Viqueque
- New towns, water supply, ports and other facilities.

Tasi Mane is presented as a package, but each component should be evaluated on its own, and Sunrise could be developed without the airports, supply base, highway or refinery. Unfortunately, most of the discussion, media coverage, and decisions about Sunrise and Tasi Mane have been personalized, politicized or nationalistic (Scambary 2015). Policy-makers have not yet seen comprehensive, unbiased, independent cost/benefit/risk analyses of each component's economic, fiscal, social and environmental impacts. The decisions to proceed with Tasi Mane have been driven by independence hero Xanana Gusmão. Although non-Timorese academic researchers have explored the anthropological roots (Bovensiepen 2020a, 2020b), political economy (Bovensiepen 2018; Scambary 2015; Rahmani 2019) and local impacts (Cryan 2015a) of the Tasi Mane project, the opportunity costs lost by putting all the country's eggs in one unsound basket are often overlooked.

**Table 3: Money spent, budgeted and needed to build the Tasi Mane project (million USD)**

Component	Location	Status	Spent through 2020	Budgeted 2021	Budgeted 2022-2025	Est. total capital cost	Percent budgeted
Airport	Suai	Constructed	77	3	9	100	90%
Highway	Suai-Fatukai	Mostly built	306	3	4	340	92%
Highway	Fatukai-Beaçu	Not started	3	1	22	1,320	2%
Supply base	Suai	Awaiting procurement	51	5	745	900	89%
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	25	-	21	6,000	1%
57% share of Sunrise J.V.	Offshore	Borrowed from Petroleum Fund	650			650	100%
Interest on loan to buy into Sunrise J.V.	Offshore	Debt accrued in Petroleum Fund	51	32	141	512	44%
57% of Sunrise upstream capital expenditure	Offshore	Pending design, seeking financing	-		-	6,840	0%
Administrative and other costs	Dili	Ongoing	58	68	-	500	25%
<b>TOTAL</b>			<b>1,226</b>	<b>112</b>	<b>948</b>	<b>18,737</b>	<b>12%</b>

Sources: MoF 2020b, 2021; TimorGAP 2020; author's estimates.

Table 3 shows that the capital investment needed to build Tasi Mane will be around \$19 billion dollars – equal to the entire Petroleum Fund. This does not include operational costs or consider financial returns, which require further study. However, government documents reveal only about 12% of the required investment, and nearly half of that is the money borrowed from the Petroleum Fund to buy into the Sunrise joint venture. International media have reported that China will loan Timor-Leste money to build Tasi Mane, but TimorGAP and other officials deny this. As of this writing, no known investors have expressed interest in this project.

Tasi Mane's future economic benefits to Timor-Leste are greatly exaggerated<sup>20</sup> (ACIL 2016; TimorGAP 2020 p. 48). Nearly all of the billions of dollars for construction will go to foreign companies. After operation begins, these facilities will provide hardly any local jobs or subcontracts. According to Australian economist Brett Inder, investing money in improved coffee production would employ six times as many workers and stimulate six times as much GDP growth as the same amount invested in Tasi Mane (Inder 2019a, 2019b). In fact, studies elsewhere show that the petroleum industry creates fewer jobs per dollar than virtually any other potential investment (CBE 2011; Bacon 2011). Although exporting oil and gas from Greater Sunrise might generate revenue for

<sup>20</sup> TimorGAP's 2019 Annual Report says "The Tasi Mane Project ... will increase national gross domestic product (GDP) and export earnings, while creating employment opportunities during construction and operation, as well as providing a catalyst for further development in the south coast region. It is projected that up to 10000 direct jobs will be created from Tasi Mane projects, and more than 50000 indirect jobs can be generated with the transformation of petroleum sector development from extractive to industrialization. In addition, the Tasi Mane Project will generate indirect benefits, influencing broader economic performance as a result of spillover effect to other industry sectors." (TimorGAP 2020).

Timor-Leste, other Tasi Mane components – highway, airports, refinery, supply base – are unlikely to recover their investment costs.

The only parts of Tasi Mane that have been built (or even contracted) so far are Suai airport and the first fifth of the highway (Gomes 2020). The airport is unused and overgrown with weeds, and part of the highway, which separates people from their families and farms, slid down the hill with the first heavy rain fall (Fundasaun Mahein 2021b). Many people have already been displaced from their homes and farms in anticipation of other Tasi Mane components (Cryan 2015a, 2015b). In addition, each part of the Tasi Mane project heightens social conflict, uses valuable land and shoreline, worsens public health, and will degrade and endanger the environment (La’o Hamutuk 2008, 2016a, 2016b; Fundasaun Mahein 2021a).

In May 2020, the restructured government replaced the Minister for Petroleum and Mineral Resources, the head of the National Petroleum and Minerals Authority (ANPM) and the head of the TimorGAP national oil company. The new men have said that previous studies were biased and that a thorough review of Tasi Mane’s costs, benefits, and risks will be done before proceeding further. In March 2021 ANPM President Florentino Ferreira told an oil industry conference that Tasi Mane “is currently subject to reassessment of its viabilities” (Ferreira 2021, slide 12). Nevertheless, the project has a lot of momentum, and the 2021 state budget envisions building the Suai Supply Base starting in 2022 (MoF 2020b, book 3a, page 36).

## **Conclusion**

In many areas, Timor-Leste has made great strides since independence. Civil and political rights are respected, democracy flourishes, and most state actions follow the rule of law. Infant and maternal mortality are greatly reduced, malaria and leprosy have been virtually eliminated, and many more people have access to electricity, education, and health care.

There is still a long way to go. Multi-dimensional poverty still afflicted 47% of people in Timor-Leste in 2016 – a significant improvement over 70% in 2009. Although this is the fourth-largest drop in the world, Timor-Leste’s Multidimensional Poverty Index (MPI) is still more than double the average for developing countries, and is worse than every non-African country except Papua New Guinea (UNDP 2020).

Timor-Leste is at a crossroads, intensified by Covid-19 and political competition. As producing oil and gas reserves near depletion, future petroleum projects will not be able to finance the nation’s economy. Although the urgency of economic diversification is well-understood by many Timorese analysts outside the political system (Cardoso 2020, 2021; Gomes 2020; da Costa Junior 2018; Guterres 2018; Neves 2019, 2020), political leaders are hesitant to acknowledge that the country needs to change direction. Economic diversification is difficult to envision and to implement.

It’s hard for many people to accept that Timor-Leste will never again receive \$3 billion/year, as it did when it was converting its non-renewable oil and gas assets to financial assets a few years ago. The only way forward – it’s not a choice – is to diversify the economy.

The Timorese authors cited in above all came of age after independence, and their minds may be more open than those conditioned by the struggle to survive and overcome a brutal foreign occupation. Although the senior “1975” generation of leaders excelled at resistance and clandestine struggle, the skill set of national heroes may not be best suited for democracy in peacetime. Their successors, including the current President, Prime Minister and most other ministers, grew up in wartime, largely isolated from the world. However, nearly three-fourths of Timor-Leste’s people are under 35, and have enjoyed more peaceful and diverse opportunities than their forebears. As this younger generation moves into decision-making roles, they are bringing fresh energy and ideas to the nation’s development and transcending old patterns.

In August 2020, Timor-Leste’s government adopted a plan for Economic Recovery from Covid-19 prevention measures, which says:

*“For Timor-Leste to grow continuously in an inclusive and sustainable way, more and better ways must be found to strengthen its production capacity and diversify its economy outside the oil sector. ... [T]he message is simple: we must rely less on our natural resources and rely more on what we can produce with our own sweat, creativity and imagination, which would imply more resources devoted to tourism, agriculture and manufacturing.” (RDTL 2020)*

This is a different message than most political leaders have been hearing and promoting. If decision-makers can overcome the fantasies and obsessions that have followed oil and gas into the public policy arena, the remainder of the Petroleum Fund could be used to kick-start more sustainable, equitable economic development.

**Figure 13: The future of Timor-Leste**



An essential first step is strengthening the country’s most precious resource – its people. Investing in nutrition, education and health care will lay the foundation for whatever paths are followed in the future. More than half of Timor-Leste’s petroleum-fuelled period has passed, but some time remains to prepare for the next phase of the country’s history.

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