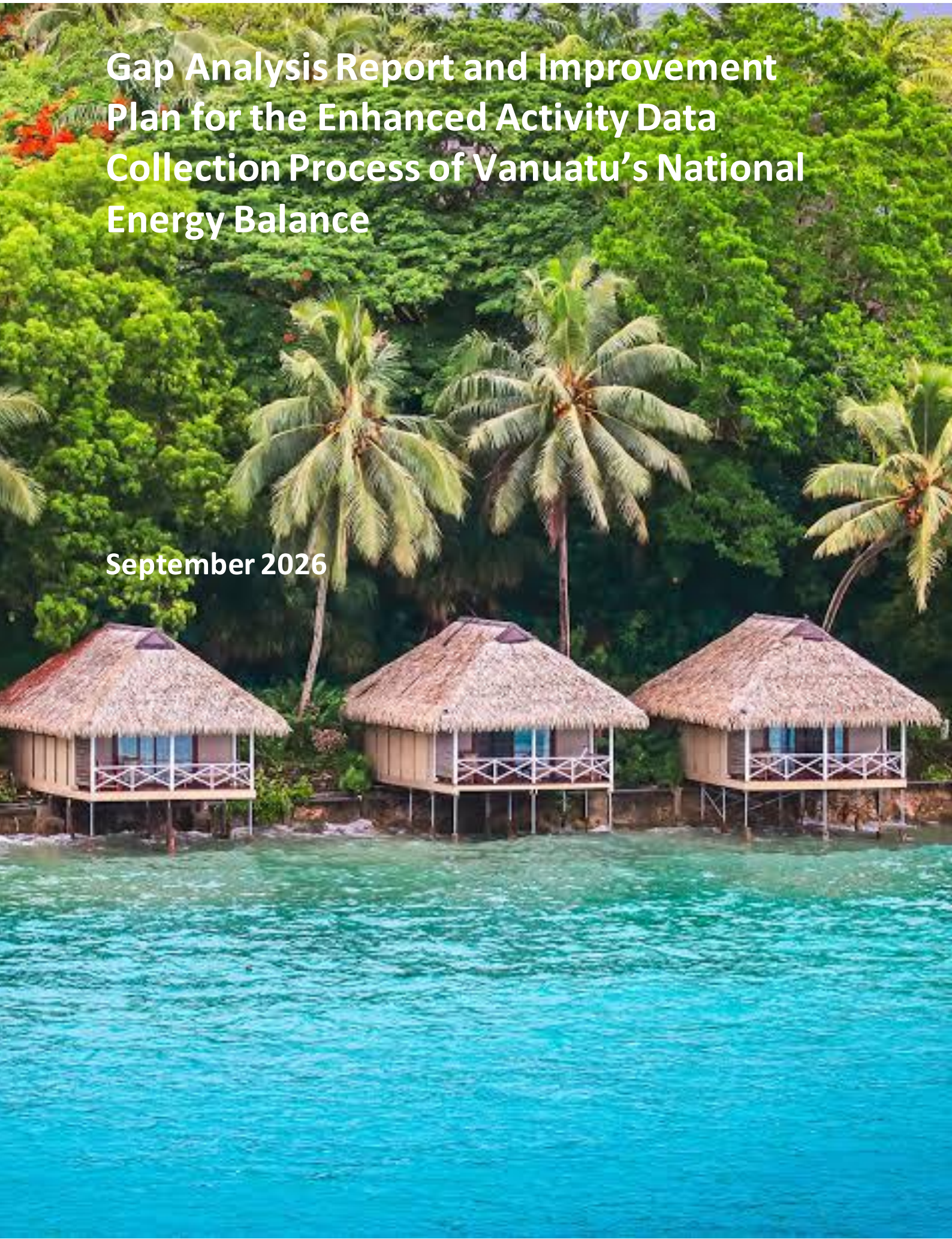


# Gap Analysis Report and Improvement Plan for the Enhanced Activity Data Collection Process of Vanuatu's National Energy Balance

September 2026

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# Gap Analysis Report and Improvement Plan for the Enhanced Activity Data Collection Process of Vanuatu's National Energy Balance

Initiative for Climate Action Transparency – ICAT

Output G

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September 2026

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# Abbreviations and Acronyms

| | |
|---|---|
| AD | Activity Data |
| BTR | Biennial Transparency Report |
| CAAV | Civil Aviation Authority of Vanuatu |
| DoCC | Department of Climate Change |
| DoE | Department of Energy |
| ETF | Enhanced Transparency Framework |
| GHG | Greenhouse Gas |
| ICAT | Initiative for Climate Action Transparency |
| IPCC | Intergovernmental Panel on Climate Change |
| NEB | National Energy Balance |
| NDC | Nationally Determined Contribution |
| PPC | Pacific Petroleum Company |
| QA/QC | Quality Assurance / Quality Control |
| URA | Utilities Regulatory Authority |
| VBoS | Vanuatu Bureau of Statistics |
| VCIR | Vanuatu Customs and Inland Revenue |
| VUI | Vanuatu Utilities & Infrastructure |
| UNELCO | Union Electrique du Vanuatu Limited |

# Introduction

The National Energy Balance depends on a reliable, complete and consistent record of how much of each petroleum product is consumed, by which sector, in each year. Vanuatu's ability to prepare accurate greenhouse gas inventories, track progress toward its Nationally Determined Contribution (NDC), develop credible greenhouse gas projections, and meet reporting requirements under the Enhanced Transparency Framework (ETF) depends heavily on the availability of complete, consistent, timely, and well-documented activity data. Within the energy sector, the National Energy Balance plays a central role because it brings together information on energy supply, transformation, and consumption across the economy and provides an important basis for energy planning, emissions estimation, and climate-policy analysis. Strengthening the National Energy Balance is therefore not only a statistical exercise, but also an important institutional and technical requirement for improving Vanuatu's national transparency system.

Under Vanuatu Phase II of the Initiative for Climate Action Transparency (ICAT) project, it focuses specifically on improving the National Energy Balance so that energy activity data can be collected and organised in a manner that is better aligned with ETF requirements. The project work plan identifies the preparation of a gap analysis report and improvement plan for the enhanced activity data collection process of the National Energy Balance for the Department of Energy. The purpose of this report is therefore to examine the current energy activity-data collection system, identify its strengths and weaknesses, determine where important data gaps remain, and propose practical improvements that can make the system more complete, regular, transparent, and sustainable.

The scope of this report is the petroleum activity data that feed the energy sector of the National Energy Balance, including fuel used for electricity generation. The report is structured as follows:

- **Vanuatu Activity Data Providers by Category and Fuel** identifies the fuels used in Vanuatu, the organisations that hold activity data for each fuel and category, and the recommended enhancements for each provider (Table 1).
- **Data Flow Process** traces the pathway of the data from origin to storage (Figure 1) and summarises the current gaps and recommended steps for each data stream (Table 2).
- **Identified Data Gaps and Needs** presents the availability of fuel consumption data by fuel, category and year (Table 3), the organisations responsible for each gap (Table 4), the conditions for regular future data provision, alternative sources for verification (Table 5), the need for formal agreements by data stream (Table 6), and example data collection and conversion templates (Tables 7 to 9).
- **Recommendations** and **Conclusion** consolidate the improvement plan, including the full annual data collection cycle and the provider-level actionable steps (Table 10), and the practical next steps for DoE and the data providers.

# Vanuatu Activity Data Providers by Category and Fuel

Vanuatu has no domestic oil production or refining, so all fossil fuels consumed in the country are imported petroleum products. Only liquid fuels (petroleum products, including LPG) are used in Vanuatu; coal and natural gas are neither imported nor produced in Vanuatu. The fuels covered by the National Energy Balance and by this report are gasoline/petrol, gas/diesel oil, aviation gasoline, jet kerosene, kerosene, liquefied petroleum gas (LPG), lubricants, bitumen and paraffin wax. These fuels are used in electricity generation, road transport, domestic and international aviation, domestic and international navigation, manufacturing industries and construction, and the commercial/institutional and residential sectors. Renewable and biomass energy sources are outside the scope of this petroleum activity-data analysis.

The current petroleum dataset is compiled from multiple sources rather than one continuous reporting stream. The source groupings shown in the worksheet include Vanuatu Bureau of Statistics (VBoS)[1], Vanuatu Customs and Inland Revenue (VCIR)[2], Pacific Petroleum Company (PPC)[3], Utilities Regulatory Authority (URA)[4], and Department of Energy (DoE)[5].

*Table 1: Vanuatu activity data providers by category and fuel*

| Data Provider | Categories | Fuel Data Provided | Recommended Enhancements |
|---|---|---|---|
| Department of Energy (DoE) | • Domestic Aviation<br>• Road Transport<br>• International Aviation<br>• Domestic Navigation<br>• Manufacturing Industries & Construction<br>• Commercial/Institutional<br>• Electricity Generation | Gasoline/Petrol, Gas/Diesel Oil, Aviation Gasoline, Jet Kerosene, Kerosene, LPG, and Lubricants | Develop and implement a standardised fuel activity-data collection template to support consistent collection of fuel data by fuel type, sector/category, reporting period, unit, source and data status. |
| VBoS | • Residential<br>• Domestic Aviation<br>• International Aviation<br>• Commercial/Institutional<br>• Manufacturing Industries & Construction | Gasoline/Petrol, Gas/Diesel Oil, Aviation Gasoline, Jet Kerosene, Kerosene, LPG, and Lubricants | Establish an MOU/MOA with DoE and the Department of Climate Change for regular annual updates of sector-specific fuel data, and provide the updated datasets to DoE in an agreed format for incorporation into the National Energy Balance. |
| Vanuatu Customs and Inland Revenue | • Domestic Aviation<br>• Road Transport<br>• International Aviation<br>• Domestic Navigation<br>• Manufacturing Industries & Construction<br>• Commercial/Institutional<br>• Electricity Generation | Gasoline/Petrol, Gas/Diesel Oil, Aviation Gasoline, Jet Kerosene, Kerosene, LPG, Lubricants, Bitumen, and Paraffin Wax | Establish a formal data-sharing arrangement, such as an MOU or MOA, with DoE and/or the Department of Climate Change to support regular sharing and updating of sector-specific petroleum and fuel-import data |

[1] Vanuatu Bureau of Statistics (VBoS), International Merchandise Trade Statistics and archived statistical publications on petroleum product imports and stocks, Port Vila. Available at: https://vbos.gov.vu

[2] Vanuatu Customs and Inland Revenue (VCIR), petroleum product import declarations (border-clearance records by product, quantity and importer), extracted on request for the Department of Energy. Available at: https://customsinlandrevenue.gov.vu

[3] Pacific Petroleum Company (PPC), petroleum product sales records by product and customer category, provided to the Department of Energy on official letter of request (unpublished).

[4] Utilities Regulatory Authority (URA), Vanuatu's Electricity Fact Sheet (annual series), compiled from UNELCO and VUI operational records. Available at: https://ura.gov.vu/en/publications/electricity-fact-sheet

[5] Department of Energy (DoE), National Energy Balance petroleum activity-data compilation worksheet (internal working file, unpublished). Available at: https://doe.gov.vu

| Data Provider | Categories | Fuel Data Provided | Recommended Enhancements |
|---|---|---|---|
| Pacific Petroleum Company | • Domestic Aviation<br>• Road Transport<br>• International Aviation<br>• Domestic Navigation<br>• Manufacturing Industries & Construction<br>• Commercial/Institutional<br>• Electricity Generation | Gasoline/Petrol, Gas/Diesel Oil, Aviation Gasoline, Jet Kerosene, Kerosene, LPG, Lubricants, Bitumen, and Paraffin Wax | Establish an MOU/MOA with DoE and the Department of Climate Change for regular monthly or annual fuel-data reporting to DoE, including fuel quantities by product and, where available, by sector/end-user category, to improve the timeliness and completeness of the National Energy Balance. |
| Utility Regulatory Authority | • Electricity Generation | Gas/Diesel Oil | Establish an MOU/MOA or other formal data-sharing arrangement with DoE and the Department of Climate Change to ensure regular provision of electricity-generation and associated fuel-consumption data |

## Data Flow Process

The data flow process focuses on tracing the complete pathway of the data: where it starts, who handles it, whether it is processed, who performs QC, whether approval is needed, and where the final data are stored. The flowchart should show the pathway from the original source to the final destination.

*Figure 1* traces the data flow of Vanuatu's petroleum activity data from origin to storage: raw import and sales data originates with oil-supplier and shipping companies and is then received by the Pacific Petroleum Company on each shipment, where it is processed internally with Q/C being done by the company before being passed on a letter of request from the Department of Energy, which then compiles it. The line in parallel on the Department of Customs border-clearance import totals (relayed through VBoS as trade and stock statistics). URA compiles electricity generation volumes from Unelco and VUI, and Origin Energy Vanuatu's LPG sales and volumes are received from the original vendors, after which the compiled data are pass through quality control and approval of data before submission on letter of request to DoE. The three steps shown as amber dashed nodes are currently unassigned or undocumented, and the point at which the process most needs strengthening. Quality control is not clearly assigned therefore, there is no guarantee that the vendor records are mapped one-to-one into Pacific Petroleum's files, or that Pacific Petroleum's figures are transcribed without error into the DoE workbook. Approval/sign-off is undocumented, and the storage endpoint is a working spreadsheet with no standardized fuel activity data template.

*Figure 1* covers all petroleum fuels used in Vanuatu. Liquid fuels (gasoline/petrol, gas/diesel oil, aviation gasoline, jet kerosene, kerosene, lubricants, bitumen and paraffin wax) follow the Pacific Petroleum Company pathway; LPG follows the Origin Energy Vanuatu (Geogas) pathway; gas/diesel oil used for electricity generation is also reported through the URA pathway; and VCIR, with VBoS, provides import and trade totals for all products.

## Data Flow Chart

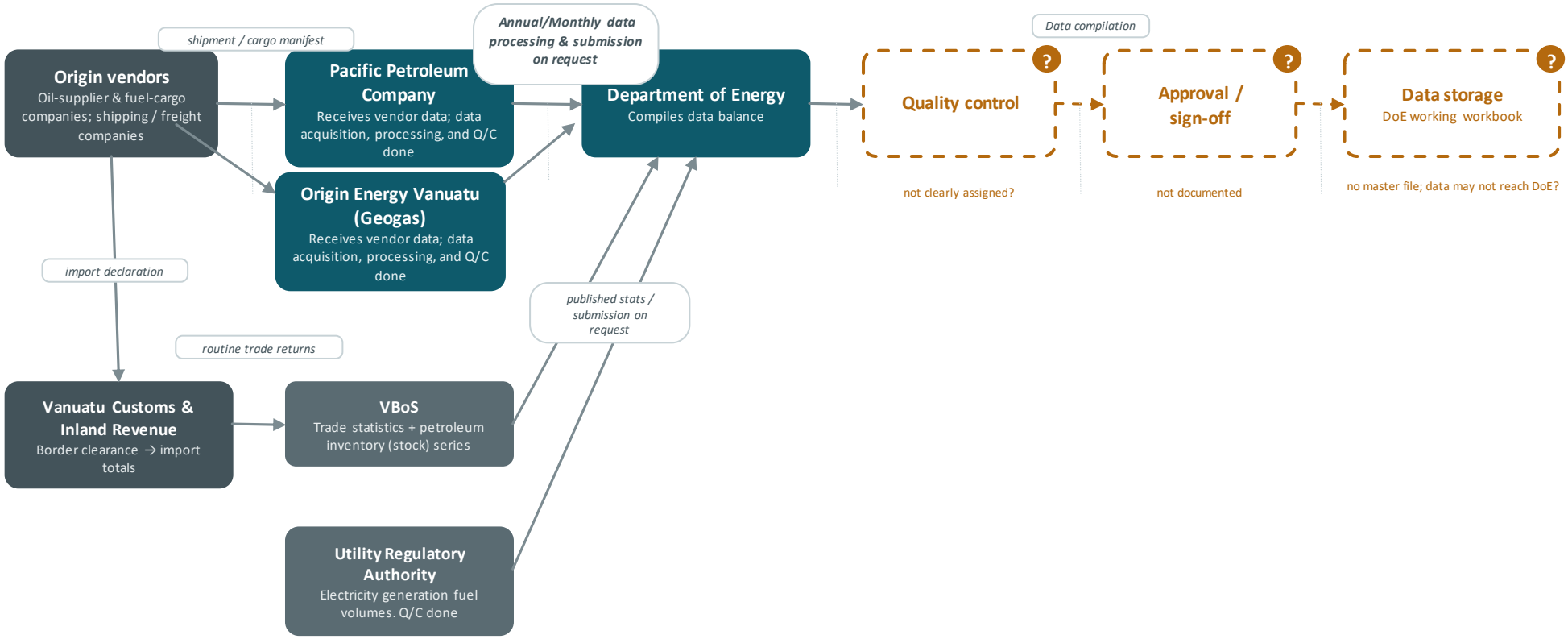



*Figure 1: Petroleum activity data flow chart from origin to storage (all petroleum fuels, including LPG)*

| Data stream | Data origin | Intermediate processing / holder | Destination | Current gap | Recommended enhancement | Recommended actionable steps |
|---|---|---|---|---|---|---|
| **Petroleum imports** | Importer declarations / customs entries | VCIR extracts fuel products and re-exports | DoE | No fully documented annual transfer and version-control procedure | Create a standing annual VCIR → DoE extract; keep sector allocation outside Customs unless end-use is actually recorded | 1. Confirm extract fields.<br>2. Agree annual due date.<br>3. VCIR exports data.<br>4. DoE checks codes/units.<br>5. Archive raw and checked files. |
| **Electricity generation** | UNELCO, VUI and other utility operational records | Utility internal reporting; URA may hold/verify regulated data | DoE | The exact route and responsibility for annual fuel-use data are not consistently documented | Use direct annual URA → DoE reporting, with URA verification/coordination where useful | 1. Confirm utility focal points.<br>2. Agree annual fields.<br>3. Submit fuel + generation data.<br>4. DoE checks fuel/kWh trend.<br>5. Archive approved file. |
| **Historical petroleum statistics** | VBoS statistical/trade collections and archived publications | VBoS processing | DoE | Historical series may use different definitions or source methods | Document the source and method for each historical series and use VBoS as an official cross-check | 1. Identify series and method.<br>2. Record coverage/units.<br>3. Compare with VCIR/supplier overlaps.<br>4. Keep original series and reconciliation notes. |
| **Domestic aviation** | Supplier fuel-uplift/sales records; airport/airline activity for verification | Supplier; CAAV/Airports Vanuatu can support flight-movement checks | DoE | Fuel quantity data for domestic aviation are not calculated in terms of finding the emissions it produces | DoCC to develop and calculate domestic aviation emissions using the IPCC Software tool | 1. Confirm fuel source/focal point.<br>2. CAAV/Airports Vanuatu to submit annual domestic uplift to DoE & DoCC.<br>3. DoCC calculates emissions |
| **International aviation** | Supplier fuel-uplift/sales records for international flights | Supplier; airport/airline records for verification | DoE | International bunker data must remain separate from domestic aviation | Maintain a separate international aviation bunker stream and document the basis of separation | 1. Confirm uplift source.<br>2. Submit annual international uplift.<br>3. Cross-check international movements.<br>4. Keep separate from domestic totals. |

*Table 2: Data flow process, current gaps and recommended steps*

# Identified Data Gaps and Needs

## Status of AD availability by category, fuel and year

*Table 3* shows, for each fuel, each consumption category and each year from 1990 to 2025, whether the fuel consumption (activity) data are available (green), available but not yet received (yellow), or missing/not available (red).

*Table 3: Status of activity data availability by category, fuel, and year*

| Fuels | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aviation Gasoline (L) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gasoline/Petrol (L) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electricity generation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road transportation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other sectors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gas/Diesel Oil (L) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electricity generation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road transportation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other sectors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Jet Kerosene (L) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Kerosene (L)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |




| Fuels | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road transportation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other sectors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **LPG (t) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Lubricant (L) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electricity generation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road transportation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domestic navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other sectors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. aviation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Intl. navigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Bitumen (kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Manufacturing & construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Paraffin Wax (kg) ·** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commercial / institutional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|---|
| | Available |
| | Not available/missing |
| | Available but not received |

## Organization responsible for identified gaps

*Table 4: Organizations or departments responsible for identifying the data gaps and alternative sources to get activity data*

| Data gap block | Primary organisation(s) | Alternative / verification source |
|---|---|---|
| Fuel Imports | VCIR | VBoS trade statistics; supplier import records |
| Petroleum sales and sector allocation | PPC / DoE | Customs totals; VBoS; sector agencies |
| Electricity fuel use | URA / UNELCO / other utilities | PPC fuel sales; DoE energy records |
| Domestic aviation | PPC / CAAV / airport / domestic operators | Airport movement data; airline records |
| International aviation | PPC / CAAV / airport / international operators | Airport movement data; airline uplift records |
| Domestic navigation | PPC / Ports & Maritime / domestic operators | Shipping operator records; supplier sales |
| International navigation / bunkers | PPC / Ports & Maritime | vessel/operator data |
| Historical statistical series | VBoS | Customs, DoE, supplier archives |

## Conditions for Regular Future Data Provision

This section is to set out the conditions under which each provider can supply activity data to DoE on a regular and predictable basis, rather than only in response to ad hoc requests. Many of the gaps in *Table 3* exist not because the data are unavailable, but because there is no standing arrangement for providing them. Meeting these conditions is therefore a prerequisite for closing the current gaps and preventing them from recurring in future inventory and BTR cycles.

Provider consultations should confirm what is workable for each organisation. In Vanuatu, the priority should be a simple arrangement that uses information already collected for business, regulatory or statistical purposes. The following conditions are likely to support regular provision:

- A signed MOU/MOA with DoE and DoCC providing a clear mandate, with the purpose of the data explained.
- A small set of required fields, agreed units and a realistic reporting frequency.
- One named focal point in each organisation, with a backup contact where possible.
- Confidentiality and aggregation rules that avoid disclosure of commercially sensitive customer information.
- A simple Excel template that can be populated from existing records without creating a parallel system.
- One agreed annual submission date, with monthly detail included only where it already exists.
- A short feedback process so providers can explain corrections, revisions or unusual values.

## Alternative Sources and Verification

Alternative sources should be used mainly for cross-checking or for filling a genuine gap. For example, VCIR import totals can be compared with supplier sales; utility fuel consumption can be checked against electricity generated; aviation fuel can be checked against flight movements; and marine fuel can be compared with port and vessel activity. These checks should be proportionate to the size of the data issue and should not create unnecessary reporting work.

*Table 5* identifies, for each data stream, the organisation that provides the primary data and the organisations whose data can be used to verify it.

*Table 5: Primary data sources and organisations whose data can be used for verification*

| Data stream | Primary data source | Verification source (organisation) | Verification check |
|---|---|---|---|
| **Petroleum imports (all fuels)** | VCIR import declarations | Pacific Petroleum Company and Origin Energy Vanuatu (Geogas) import records; VBoS trade statistics | Compare annual import volumes by product; explain material differences (e.g. timing, re-exports, stock changes). |

| Data stream | Primary data source | Verification source (organisation) | Verification check |
|---|---|---|---|
| **Petroleum sales and sector allocation** | Pacific Petroleum Company | VCIR import totals; VBoS statistics; sector agencies (e.g. URA for the power sector) | Total sales should be consistent with imports less re-exports, adjusted for stock change; sector totals checked against sector records. |
| **LPG** | Origin Energy Vanuatu (Geogas) | VCIR LPG import records; VBoS trade statistics | Compare annual LPG sales with LPG imports. |
| **Diesel for electricity generation** | URA (compiled from UNELCO and VUI) | Pacific Petroleum Company diesel sales to utilities; UNELCO and VUI generation records (kWh) | Compare fuel delivered with fuel reported as consumed; track litres per kWh generated over time. |
| **Domestic aviation (aviation gasoline, jet kerosene)** | Pacific Petroleum Company fuel-uplift records | CAAV and Airports Vanuatu domestic flight-movement data; domestic airline records | Check fuel use against the number and type of domestic flights over time. |
| **International aviation bunkers** | Pacific Petroleum Company uplift records for international flights | Airports Vanuatu international movement data; airline uplift records | Confirm the domestic/international split and keep bunkers separate from national totals. |
| **Domestic navigation and international marine bunkers** | Pacific Petroleum Company marine fuel sales | Ports & Maritime authorities (vessel calls); shipping operator records | Check fuel sold against vessel activity and confirm the domestic/international split. |
| **Historical statistical series** | VBoS | VCIR, DoE and supplier archives | Compare overlapping years and document differences in definitions or coverage. |

## Need for Process Change or Formal Agreements

A formal MOU or MOA is required for every data stream shown in *Figure 1* and *Table 2*. A formal agreement gives each provider a clear mandate to share data, documents the confidentiality conditions that apply, and ensures that data provision continues when staff change. Each MOU/MOA should specify the data fields, units, reporting frequency and submission date, the focal points in each organisation, the confidentiality and aggregation rules, and the procedure for corrections and revisions. For PPC and other commercial suppliers, the MOU/MOA should incorporate an agreed reporting protocol and aggregation rules that protect commercially sensitive customer information. Until each MOU/MOA is signed, a standing official request, agreed template, annual calendar and named focal points should be used as an interim arrangement.

*Table 6* lists each data stream shown in *Figure 1* and *Table 2*, the parties to the recommended MOU/MOA and the key provisions it should cover.

*Table 6: MOU/MOA arrangements by data stream*

| Data stream (Figure 1) | Provider(s) | MOU/MOA parties | Key provisions |
|---|---|---|---|
| **Petroleum imports** | VCIR | VCIR, DoE and DoCC | Annual import extract by product; confidentiality of importer-level customs data. |
| **Electricity generation and fuel use** | URA (UNELCO, VUI) | URA, DoE and DoCC (with utilities as needed) | Annual fuel consumed and electricity generated by utility/grid; reconciliation support. |
| **Petroleum sales and sector allocation** | Pacific Petroleum Company | PPC, DoE and DoCC | Monthly or annual sales by product and sector; reporting protocol; aggregation rules for commercially sensitive data. |
| **LPG sales** | Origin Energy Vanuatu (Geogas) | Origin Energy Vanuatu, DoE and DoCC | Annual LPG sales by sector; reporting protocol; aggregation rules. |
| **Historical and trade statistics** | VBoS | VBoS, DoE and DoCC | Annual extracts from existing statistical tables; documentation of definitions and methods. |

| Data stream (Figure 1) | Provider(s) | MOU/MOA parties | Key provisions |
|---|---|---|---|
| **Domestic and international aviation** | Pacific Petroleum Company; CAAV / Airports Vanuatu | PPC (fuel data) and CAAV / Airports Vanuatu (verification data), with DoE and DoCC | Fuel uplift split between domestic and international flights; annual flight-movement data for verification. |
| **Domestic navigation and marine bunkers** | Pacific Petroleum Company; Ports & Maritime authorities | PPC (fuel data) and Ports & Maritime authorities (verification data), with DoE and DoCC | Marine fuel sales split between domestic and international; vessel activity data for verification. |

## Need for Data Collection Templates

Provider-specific templates are recommended, but they should remain simple. A small number of templates is preferable: (i) imports/re-exports, (ii) supplier sales and sector allocation, (iii) electricity generation and fuel use, (iv) aviation, and (v) marine/bunkers. VBoS can normally provide an extract from its existing statistical tables rather than complete a separate form. Each template should capture reporting period, fuel, quantity, unit, category where available, source reference, data status and contact person.

Two example templates are shown below: Table 7 for supplier sales and sector allocation (template ii) and *Table 8* for electricity generation and fuel use (template iii). Each template should be issued as a single Excel sheet with a header block recording the provider name, submission date and focal point. Providers complete one row per fuel and category; the data status column records whether each value is actual, estimated or provisional. The rows shown are illustrative and should be extended to cover all fuels and categories the provider supplies.

*Table 7: Example data collection template – supplier sales and sector allocation (e.g. Pacific Petroleum Company)*

| Reporting period | Fuel | End-use category (IPCC code) | Quantity | Unit | Source reference | Data status | Contact person |
|---|---|---|---|---|---|---|---|
| 2025 | Gas/Diesel Oil | Electricity generation (1.A.1.a) | | L | | | |
| 2025 | Gas/Diesel Oil | Road transportation (1.A.3.b) | | L | | | |
| 2025 | Gas/Diesel Oil | Domestic navigation (1.A.3.d.ii) | | L | | | |
| 2025 | Gasoline/Petrol | Road transportation (1.A.3.b) | | L | | | |
| 2025 | Jet Kerosene | Domestic aviation (1.A.3.a.ii) | | L | | | |
| 2025 | Jet Kerosene | International aviation bunkers (1.A.3.a.i, memo item) | | L | | | |
| 2025 | Kerosene | Residential (1.A.4.b) | | L | | | |

*Table 8: Example data collection template – electricity generation and fuel use (URA, UNELCO, VUI)*

| Reporting year | Utility / grid | Fuel | Fuel consumed | Unit | Electricity generated (kWh) | Source reference | Data status |
|---|---|---|---|---|---|---|---|
| 2025 | UNELCO – e.g. Efate grid | Gas/Diesel Oil | | L | | | |
| 2025 | UNELCO – other grids | Gas/Diesel Oil | | L | | | |
| 2025 | VUI – e.g. Luganville (Santo) grid | Gas/Diesel Oil | | L | | | |
| 2025 | [Other generator] | Lubricant | | L | n/a | | |

### Need for Conversion Templates

A separate conversion sheet should preserve the original value and unit and show each transformation used by DoE, including product mapping, density conversion, net calorific value conversion, sector reclassification and any estimation. Raw provider data should never be overwritten. Where a value is estimated, the assumption and method should be recorded next to the calculated value.

*Table 9* shows an example conversion sheet. The original value and unit are copied unchanged from the provider submission, and each subsequent column records one transformation. Mass (t) is calculated as volume (L) multiplied by density (kg/L) and divided by 1,000; energy (TJ) is calculated as mass (t) divided by 1,000 and multiplied by the net calorific value (TJ/Gg). The quantities shown are illustrative and are not Vanuatu data; the net calorific values are IPCC 2006 Guidelines defaults, and densities should be replaced with supplier-specific values where available.

*Table 9: Example conversion template (illustrative values)*

| Fuel | Original value | Original unit | Density (kg/L) | Mass (t) | NCV (TJ/Gg) | Energy (TJ) | NEB / IPCC category | Method and source notes |
|---|---|---|---|---|---|---|---|---|
| Gas/Diesel Oil | 1,000,000 | L | 0.84 | 840 | 43.0 | 36.12 | Electricity generation (1.A.1.a) | Density: typical value, replace with supplier value; NCV: IPCC 2006 default |
| Gasoline/Petrol | 1,000,000 | L | 0.74 | 740 | 44.3 | 32.78 | Road transportation (1.A.3.b) | As above |
| Jet Kerosene | 1,000,000 | L | 0.80 | 800 | 44.1 | 35.28 | Domestic aviation (1.A.3.a.ii) | As above |
| LPG | 100 | t | n/a | 100 | 47.3 | 4.73 | Residential (1.A.4.b) | Reported in tonnes; no density conversion needed |

## Recommendations

The gap analysis report aims to turn Vanuatu's petroleum data collection into a regular, documented and verifiable system built around the Department of Energy. DoE should develop and roll out a single standardised activity-data collection template capturing fuel types, sector/category, quantity, unit, reporting period, source and data status, supported by a separate conversion sheet that preserves each original value and unit and records every transformation applied (product mapping and unit conversions). Each provider is then given a defined role: the Vanuatu Bureau of Statistics should supply regular annual updates of sector-specific fuel data to DoE in an agreed format; Vanuatu Customs and Inland Revenue should provide a standing annual import extract and enter a formal data-sharing arrangement (MOU/MOA) with DoE and the Department of Climate Change.

It is recommended that Pacific Petroleum Company should report fuel data monthly/annually by product and, where possible, by sector or end-user; and the Utilities Regulatory Authority should provide electricity-generation and associated fuel-consumption data annually under a formal arrangement, each broken down into practical steps of confirming available datasets and fields, nominating focal points, agreeing formats, units, frequency and confidentiality terms, setting an annual submission date. Along the data-flow chain it further recommends, documenting the

source and method of each historical VBoS series and using VBoS as an official cross-check, having DoCC calculate domestic aviation emissions through the IPCC inventory software, and maintaining international aviation as a separate, clearly documented bunker stream. To make regular provision realistic, it recommends that requests rest on a clear official mandate from DoE, a small agreed set of fields and units, one named focal point (with a backup) per organisation, confidentiality and aggregation safeguards, a simple Excel template drawn from existing records, one annual submission date, and a short feedback loop for corrections, noting that an MOU/MOA is needed for every stream (see Table 6), and that alternative sources such as comparing Customs import totals against supplier and Pacific Petroleum records should be used mainly to cross-check figures and fill genuine gaps.

### Recommended Actionable Steps

The recommended enhancements in *Table 1* describe what each provider should achieve. The actionable steps below describe how each provider can put those enhancements into practice, moving from the current ad hoc, request-based supply of data to a regular, documented annual submission to DoE. The provider steps form one part of a complete annual National Energy Balance data collection cycle, whose full sequence is:

- **Stage 1 – Planning and request (DoE):** update the provider register and annual data calendar, and issue an official data request with the agreed template to each provider.
- **Stage 2 – Provider preparation and submission (data providers):** extract the requested data from existing records, complete the template and submit it to DoE by the agreed date. The provider-specific actions for this stage are set out in Table 10.
- **Stage 3 – Receipt and logging (DoE):** record each submission in the provider register and save the raw file, unchanged, in the data archive.
- **Stage 4 – Quality control (DoE):** check completeness, units and time-series consistency, cross-check against alternative sources (Table 5) and send clarification requests back to providers.
- **Stage 5 – Conversion and compilation (DoE):** convert the data using the conversion sheet (Table 9), map each value to the National Energy Balance and IPCC categories, and compile the balance.
- **Stage 6 – Review and approval (DoE management, with DoCC):** review and formally sign off the compiled balance, and record the approval.
- **Stage 7 – Storage and sharing (DoE):** save the approved balance in a version-controlled master file and share it with DoCC for the GHG inventory and ETF reporting.
- **Stage 8 – Feedback and improvement (DoE and providers):** report corrections and revisions back to providers, and update the templates, provider register and improvement log for the next cycle.

Stages 4, 6 and 7 correspond to the quality control, approval and storage steps currently shown as unassigned or undocumented in *Figure 1*. *Table 10* details the provider-level steps that make up Stage 2.

| Data Provider | Recommended Actionable Steps |
|---|---|
| **Department of Energy (DoE)** | **Step 1:** Identify the fuel categories and data fields required for the National Energy Balance.<br>**Step 2:** Develop a standard fuel activity-data collection template covering fuel type, sector/category, quantity, unit, reporting period, source and data status.<br>**Step 3:** Circulate the draft template to key providers for review.<br>**Step 4:** Finalise and approve the template for official use.<br>**Step 5:** Use the template for all future annual/monthly fuel-data requests and maintain a central record of submissions. |
| **Vanuatu Bureau of Statistics (VBoS)** | **Step 1:** Confirm the fuel datasets currently available by sector and year.<br>**Step 2:** Agree with DoE on the specific sector-level fuel information to be updated annually, and formalise the arrangement in an MOU/MOA with DoE and DoCC.<br>**Step 3:** Establish an annual reporting schedule and submission date.<br>**Step 4:** Provide the updated dataset to DoE using the agreed format/template.<br>**Step 5:** Review and reconcile any differences between VBoS data and other sources such as Customs or supplier records. |
| **Vanuatu Customs and Inland Revenue (VCIR)** | **Step 1:** Confirm the fuel-import datasets available, including product, quantity, unit, importer and year/month.<br>**Step 2:** Identify the appropriate VCIR and DoE/DoCC focal points for data sharing.<br>**Step 3:** Agree on the data fields, reporting frequency and confidentiality requirements.<br>**Step 4:** Prepare and sign an MOU/MOA or other formal data-sharing agreement where required.<br>**Step 5:** Establish a regular data-transfer schedule and provide updates to DoE in the agreed format.<br>**Step 6:** Review the arrangement periodically to ensure continuity and completeness. |
| **Pacific Petroleum Company (PPC)** | **Step 1:** Confirm the fuel products and sector/end-user information available in PPC records.<br>**Step 2:** Agree with DoE on the fields required for monthly reporting, including fuel type, quantity, unit, sector/end user and domestic/international use where relevant, and formalise the arrangement in an MOU/MOA with DoE and DoCC.<br>**Step 3:** Nominate a PPC focal point responsible for preparing and submitting the data.<br>**Step 4:** Establish a fixed monthly submission date.<br>**Step 5:** Submit the monthly fuel data using the agreed DoE template.<br>**Step 6:** DoE performs completeness and consistency checks and sends any clarification requests back to PPC. |
| **Utilities Regulatory Authority (URA)** | **Step 1:** Identify the electricity-generation and fuel-consumption data currently held by URA.<br>**Step 2:** Agree with DoE and DoCC on the specific data fields required, including fuel consumed and electricity generated.<br>**Step 3:** Nominate institutional focal points.<br>**Step 4:** Prepare and sign an MOU/MOA or other formal data-sharing arrangement where needed.<br>**Step 5:** Establish an annual or agreed reporting schedule.<br>**Step 6:** Submit the data to DoE and support reconciliation of fuel use against electricity generation. |

*Table 10: Recommended actionable steps for activity data providers*

# Conclusion

Vanuatu has a useful base of petroleum and electricity activity data, but the information is spread across different institutions and has been collected for different purposes. The main improvement need is therefore not to build a completely new system. It is to make the existing system more regular and transparent: identify the real source of each data stream, agree a simple annual submission process, document checks and corrections, and keep a controlled archive of raw and processed data.

A practical first step is for DoE to manage a small provider register, an annual data calendar, a set of excel fuel activity data templates and a signed MOU/MOA with each data provider. This approach is more likely to be sustainable within Vanuatu's existing institutional capacity while still improving the completeness, consistency and traceability of the National Energy Balance.

Once these arrangements are operating consistently, DoE can progressively improve historical gaps, sector allocation and digital data management. The strengthened National Energy Balance will then provide a more reliable basis for energy planning, Vanuatu's national GHG inventory, BTR/ETF reporting, NDC tracking and future GHG projections.