



Human Environment and Transport
Inspectorate
*Ministry of Infrastructure
and Water Management*

The effects of the On-Road Fuels Policy Rule on exports to West Africa

Evaluation of the ILT policy rule on duty of care for
export of on-road fuels to low and middle-income
countries (in particular West Africa)



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Colophon

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Extensive summary

Policy rule on duty of care

In 2018, the Human Environment and Transport Inspectorate (ILT) published a study into the export of fuels from the Netherlands to West Africa. This showed that they contained high levels of harmful substances. Follow-up studies by the ILT and TNO in 2020 and 2021 showed that the quality of the transported fuel has harmful consequences for people and the environment, but also for vehicles.

In response to this and after consultation with the sector, the ILT published a policy rule. This came into effect in 2022. It states that it considers the export of petrol and diesel containing more than 50 ppm (parts per million) of sulphur, 1% of benzene and 2 milligrams of manganese per litre to be a violation of the duty of care for substances and mixtures under the *Wet milieubeheer* (Environmental Management Act). This is in line with the agreements made by the West African countries (ECOWAS) on improving fuel quality.

The policy rule announced an evaluation after 2 years. The results of this evaluation are set out in this report, below is a summary of the conclusions.

Compliance with the policy rule

The companies that produce fuel in the Netherlands and traders who export it to West Africa have committed themselves to the sulphur and benzene content in the policy rule. Since April 2023, after the end of the transition period, on-road fuels exported from the Netherlands have complied with the policy rule for sulphur and benzene content.

With respect to a manganese-containing additive to increase the octane number¹ to RON91, most traders avoid the policy rule:

- First, by using another metal-containing additive (ferrocene) without carrying out a risk assessment themselves. This is also expected to be harmful, but not explicitly limited by the policy rule.
- Later by deliberately exporting petrol with a too low octane number as a semi-finished product. Manganese is added outside the Netherlands to meet the octane number in petrol required by West African countries.

Especially large fuel traders based in Switzerland operate in this way.

Development of the fuel quality in West Africa

The Netherlands is one of the most important fuel-exporting countries to West Africa. Several West African countries appreciate the fact that the Government of the Netherlands takes co-responsibility for improving fuel quality in their region. They see this as support for their own ambitions and regulations agreed within ECOWAS.

In the case of sulphur, the quality of petrol in West Africa has improved significantly compared to the situation in the first ILT report (2018). This also applies to Nigeria in the case of benzene. This is not the case for metallic additives.

It is not possible to determine how much the policy rule has contributed to quality improvement. This is due to insufficient data. The policy rule does support the agreements between the West African countries and developments in the market. The largest African oil refinery was taken into operation in Nigeria in 2024. This Dangote refinery has a capacity of 650,000 barrels per day and is designed to produce clean fuels.

The impact of the policy rule on the quality of petrol in West Africa would have been greater if international traders had not avoided it and initially not moved their production and exports to Belgium in particular.

Effects on petrol exports from the Netherlands to West African countries

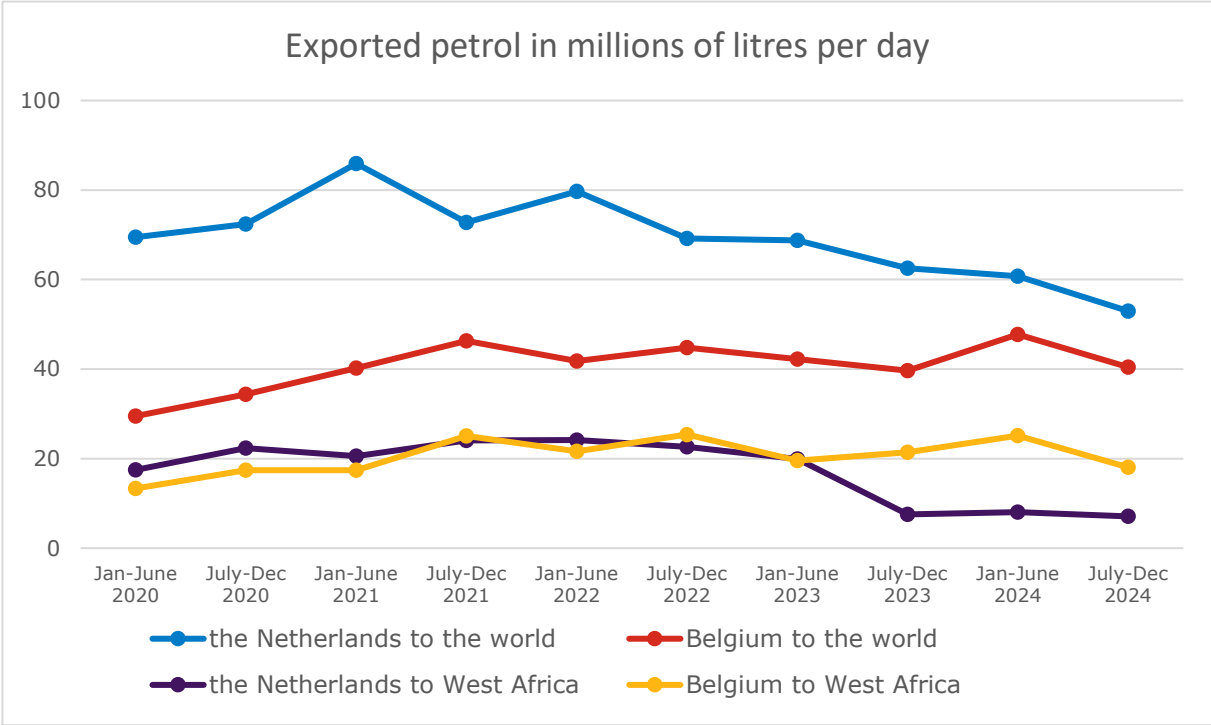
Diesel

Diesel exports have come to a standstill due to developments in the diesel market and European Union (EU) sanctions against Russia. This evaluation will therefore not discuss this any further.

Petrol

Since the policy rule came into effect, petrol exports from the Netherlands to West Africa have declined. Partly because international traders moved some of their production to Belgium, as can be seen in Figure 1. Figure 1 also shows that the Netherlands' total petrol exports have been declining every year since January 2021.

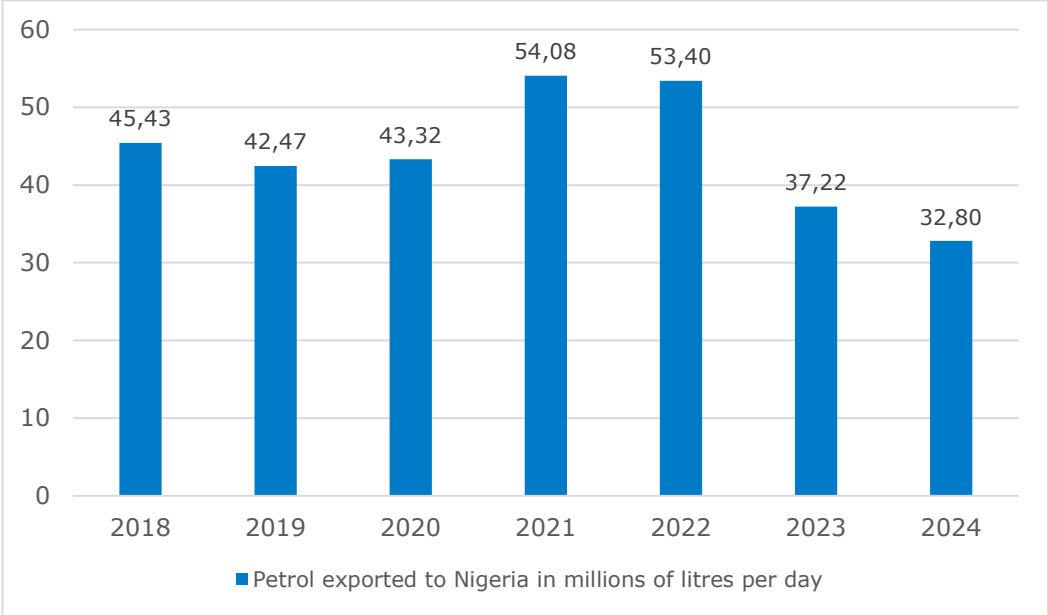
Figure 1: Exported petrol from the Netherlands and Belgium



Source: graph compiled by the ILT based on data from Vortexa

The reduced petrol exports from the Netherlands to West Africa coincided with a (30%) reduction in import demand from Nigeria when the Nigerian government removed the domestic subsidy on petrol in 2023. Figure 2 shows the impact of this on petrol exports to Nigeria.

Figure 2: Petrol exported to Nigeria



Source: graph compiled by ILT based on data from Vortexa

Financial feasibility of compliance with policy rule

The ILT, together with market information agency Argus ², has once again studied the financial feasibility of the policy rule for companies producing and exporting in the Netherlands. The reason for this was to determine whether it was necessary to move production to Belgium.

An Argus publication on this subject points out that Nigeria and other West African countries have been paying high prices for the quality they receive for years.

Traders buy export petrol for Nigeria at the price of European quality petrol to which no ethanol has been added. They do this in the ARA area (Amsterdam-Rotterdam-Antwerp). They then base the sales price to Nigeria on the price of premium European petrol, while the delivered petrol is of a much lower quality. This price differential has historically been particularly beneficial to fuel traders, many of whom operate from Switzerland and the UK. They buy petrol in Europe and trade it at a higher price when delivered to West African countries. According to one trader, the price difference between the delivered petrol quality and that of premium petrol is compensated by discount agreements in the sales contracts. This comment was not substantiated. Due to a lack of transparency in the market, the ILT cannot monitor this either.

According to the ILT, the policy rule (2023-2024) has not led to an impossible revenue model for traders operating from the Netherlands. Relocating to another country was therefore not necessary. The policy rule has contributed to a fairer price-quality ratio for the receiving West African countries by bringing the quality more into line with the benchmarks used.

Argus' analysis strengthens the substantiation of the financial feasibility as stated in the explanation of the policy rule.

International level playing field

In 2024, Belgium drew up a Royal Decree that regulates the same as the policy rule in the Netherlands. This has ensured a level playing field throughout the ARA area since September 2024. In 2023 and 2024, the Netherlands and Belgium together accounted for approximately half of West Africa's petrol imports. If exports from the Netherlands and Belgium remain high, this will make an important contribution to improving fuel quality in West Africa.

After the Dangote refinery in Nigeria became operational in 2024, the sulphur standard for petrol in this country is tightened to 50 ppm. This already was the case for diesel. This also contributes to a more level playing field for companies exporting petrol to West Africa. Nigeria is the largest importing country in West Africa for petrol.

Outlook

In 2023, the OECD tightened its guidelines for Multinational Enterprises on Responsible Business Conduct and the due diligence required of companies on the basis of these guidelines. Companies must now also conduct due diligence on the impact of using their products. This is in line with the statutory duty of care on which the policy rule is based.

The ILT will bring the practices of traders established in Switzerland to the attention of the Swiss National Contact Point (NCP) for OECD Guidelines and to the Swiss government.

At the beginning of 2025, the Benelux Union, together with the United Nations Environment Programme (UNEP), called on other European exporting countries and the European Commission to follow the example of Belgium and the Netherlands. This is in response to the Benelux recommendation to export cleaner fuels from the Benelux countries.

An EU approach was discussed at the Energy Council of European Economic Affairs Ministers in December 2024. Internationally operating companies can also play a role in developing a level playing field. For example, they can join Ipieca initiatives for cleaner fuels. Ipieca is the international trade association for the oil and gas sector. It is committed to improving environmental and social performance in the energy sector.

Now that Belgium has adopted the specifications of the policy rule into formal legislation and the Netherlands has signed the Benelux recommendation, the *ministerie van Infrastructuur en Waterstaat, IenW* (Ministry of Infrastructure and Water Management) is currently exploring whether and how the policy rule could be converted into binding regulations, possibly via an Order in Council (AMvB). In further developing the policy, the IenW will also look at experiences with compliance with the policy rule. In its supervision, the ILT works together with its Belgian colleagues.

The Municipality of Amsterdam wants to transform the global petrol port into a storage port for sustainable energy carriers. The production and storage of petrol for export in the Netherlands takes place mainly in Amsterdam.

Introduction

In 2018, the Human Environment and Transport Inspectorate (ILT) published its [study into the export](#) from the Netherlands to West Africa. This showed that fuels containing high levels of harmful substances were exported from ports in the Netherlands to West Africa. This mainly takes place from the port of Amsterdam. Follow-up studies by the [ILT](#) and [TNO](#) in 2020 and 2021 showed that the quality of the transported fuel has harmful consequences for people and the environment, but also for vehicles.

In August 2022, the ILT presented a [policy rule](#) to combat those harmful effects. Based on the duty of care for substances and mixtures in the Environmental Management Act, it sets requirements for the contents of sulphur, benzene and manganese in exported fuels. The requirements were tightened in April 2023 to the values that currently apply:

- A maximum of 50 ppm of sulphur
- A maximum of 1% of benzene
- A maximum of 2 milligrams of manganese per litre

Manganese is used as an additive to increase the octane number (RON) to the minimum RON of 91 required in many West African countries.

Before publication in the *Staatscourant* (Government Gazette), the ILT consulted stakeholders in the fuel and terminal sector. This revealed that the companies expected:

- The production of fuel for the West African market is shifting from the Netherlands to other countries. This is because there is no level international playing field and this has major financial consequences for the terminal sector.
- This shift means that the policy rule of the Netherlands will have little effect 'at the African pump'. Imports from the Netherlands are taken over by countries where this policy does not apply.

In the policy rule, the ILT announces an evaluation after 2 years. The following questions are central to this:

- Do fuel producers and traders active in the Netherlands comply with the policy rule?
- Is an international level playing field being created for companies operating from the Netherlands?
- Did the policy rule result in a reduction of the production of on-road fuels in the Netherlands because it relocated to different production countries?
- Did the policy result in improvements in fuels at petrol stations in Africa?
- Was compliance with the policy rule practicable and financially feasible for companies?

The draft of this evaluation has been submitted to oil companies, international traders and relevant industry associations in the Netherlands. The responses have been taken into account.

Compliance with the policy rule

Sulphur and benzene

The sulphur and benzene content in fuel has decreased significantly compared to the situation before 15 August 2022. On 1 April 2023, after the end of the transition period, petrol and diesel exported from the Netherlands met the sulphur and benzene requirements imposed by the policy rule.

'Octane boosters': ferrocene instead of manganese

The policy limits the manganese content in petrol to a maximum of 2 milligrams per litre. This content is equal to the manganese standard in petrol from the EU that has been in effect since 2014. This essentially means that no manganese-containing additive may be added to the petrol.

Similarly to sulphur and benzene, companies in the Netherlands stopped adding manganese to petrol destined for West Africa on 1 April 2023.

The ILT saw that instead, producers and traders started using ferrocene to increase the octane number of export petrol. Ferrocene is an octane number-increasing additive based on iron.

The African Association of Automotive Manufacturers (AAAM), an organisation that focuses on the expansion and deepening of the automotive industry throughout Africa, has written to the ILT, stating that it advises against the use of metallic additives, such as ferrocene. In practice, these cause damage to critical car parts. This not only increases the emission of harmful substances, but also increases costs for car owners. The organisation recommends an iron content of a maximum of 1 milligram per litre, which is in line with the C/DIR.1/9/2020 Directive for harmonised specifications for automotive fuels (petrol and diesel) adopted by ECOWAS countries in 2020. The AAAM letter has been added to this evaluation as an appendix.

The ILT requested TNO in 2024 to carry out a study into the possible consequences for the environment and engine technology as a result of the use of petrol additives, in particular additives that contain metal. The findings of this study are included in the report 'Petroleum fuel additives effects on vehicle technology and the environment' (TNO 2024 R10311).

The study states that the EU legislator has decided to place the burden of proof that metallic additives, including ferrocene, are not harmful to the environment and engine technology on the manufacturers of additives and fuels. The legislator does this on the basis of the EU precautionary principle, which is based on Article 174, paragraph 2, of the Treaty establishing the European Community. Based on this precautionary principle and lack of burden of proof, metallic additives are de facto not permitted in petrol used in the EU. The TNO report has been added to this evaluation as an appendix.

Because of this precautionary principle, the ILT has requested the companies that compose petrol for export to West Africa in the Netherlands to share a risk analysis regarding the use of ferrocene on the basis which they consider use responsible. None of the companies submitted such a risk analysis.

The ILT informed several countries in western and southern Africa that import petrol from the Netherlands, the ECOWAS Commission and the UN Environment Programme (UNEP) about the switch to ferrocene as an octane booster. Several African countries indicated that they found this undesirable. Ghana has tightened its national standard for metallic additives.

The export of semi-finished products

The ILT has noticed that from 2024 onwards, petrol mixtures with a low octane number (such as RON 89) are exported more often from the Netherlands. This is after the ILT informed the companies that the use of ferrocene is undesirable based on the above arguments.

As such, the octane number is lower than required by most destination countries in West Africa (RON 91). This is only increased later in the chain and outside the Netherlands, often with a manganese-containing additive.

These mixtures with an insufficient RON are being exported as semi-finished product. Some fuel traders believe that by doing so, they are complying with the policy rule.

The ILT believes that the policy rule is being deliberately circumvented in this way. This is contrary to the duty of care on which the policy rule is based. When composing the semi-finished product in the Netherlands, the later metal-containing additive is consciously taken into account. This is contrary to the intention of the policy rule.

Not all oil companies exhibit the same avoidance behaviour. An oil company operating in the Netherlands chose not to relocate production in the Netherlands to other countries and to bear the costs of the duty of care. Moreover, the quality of several recent exports was fully in line with the policy rule.

Conclusions

- The policy rule is met for both sulphur and benzene.
- In the case of manganese, most exporting traders avoid the policy rule:
 - First, by using another metallic additive - without a risk assessment - that is also expected to be harmful, but is not explicitly limited by the policy rule.
 - Later by deliberately exporting petrol with a low octane number as a semi-finished product. Manganese is then added outside the Netherlands to meet the import quality for West African countries.
- Although it is difficult to enforce based on the policy rule, the ILT is of the opinion that these deliberate actions are in conflict with the duty of care. This practice is mainly followed by large fuel traders based in Switzerland.

Development of an international level playing field

The sector warned of the shift from the Netherlands to Belgium during the consultation round concerning the policy rule. It referred to the need for a European level playing field. The following developments and initiatives are relevant for the development of a level international playing field.

Benelux Union

In 2022, the ILT took the initiative to set up a working group under the flag of the Benelux Union. The aim was to harmonise the approach to fuel exports to West Africa for (at least) the entire ARA region.

This working group led to a [recommendation](#) from the Benelux Union to the Member States to harmonise policy and supervision on the export of fuels to, among others, West African countries. During an [event](#) of the Benelux Union in February 2025, co-organised with UNEP, calls were made for further action by other exporting, trading and importing countries.

Royal Decree

In September 2024, a [Royal Decree \(in Dutch\)](#) entered into force in Belgium on the quality indication and quality requirements for petrol and diesel for export to countries that are not members of the European Union or the European Economic Area. The Decree contains specifications for the export of petrol and diesel to, among others, West African countries that are comparable to the specifications in the policy rule in the Netherlands. This means that the harmonisation of the quality requirements in the ARA zone is a fact.

The [Groene Amsterdammer of November 2024 \(in Dutch\)](#) states:

“The introduction of the policy rule in the Netherlands and its subsequent partial relocation to Antwerp appears to have accelerated the introduction of Belgian legislation. Remarkably, Belgian legislation was developed partly at the request of the industry due to increased prices for tank storage in Antwerp.”

The unilateral measures in the Netherlands therefore appear to have had a stimulating effect on achieving a more level playing field for the production of cleaner fuels.

Order in Council, AMvB

Now that Belgium has adopted the specifications of the policy rule into formal legislation and the Netherlands has signed the Benelux recommendation, the IenW is currently exploring whether and how the policy rule could be converted into binding regulations, possibly via an AMvB. In further developing the policy, experiences with compliance with it will also be included.

Proposal on the Energy Council for EU rules

The proposal to formulate an EU approach has been put on the agenda of the European Energy Council of 16 December 2024. The Belgian Minister of Economic Affairs submitted the proposal, the Luxembourg, Netherlands and German Ministers of Economic Affairs supported the proposal.

Switzerland

Traders established in Switzerland circumvent the policy rule by producing or blending their products outside the Netherlands or by having this done.

Although these aspects are difficult to enforce based on the policy rule, the ILT believes that some actions are in conflict with the duty of care. The IenW and the ILT are therefore committed to cooperation with the Swiss authorities and have shared their concerns with their Swiss colleagues. The Swiss traders' practices raise broader concerns about their compliance with the [revised OECD Guidelines for Multinational Enterprises](#) on Responsible Business Conduct. Companies must also conduct due diligence on the impacts of using their products. Companies are expected to address the greatest risks of negative impact first.

Tightened fuel standards in Nigeria

A sulphur standard of 150 and 50 ppm applies for petrol and diesel respectively (as laid down in NIS 948:2017 & NIS 116:2017). However, from March 2024, an exemption applied to the import of all refined products with a maximum of 200 milligrams of sulphur per kilogram (source: SGS INSPIRE). In 2024, the largest oil refinery in Africa (Dangote) in Nigeria started producing diesel and petrol. This refinery was designed to produce clean petrol and diesel. After an upgrade, the refinery is likely to produce petrol with a sulphur content of less than 55 ppm from mid-2025. In anticipation of this, the Nigerian government is developing cleaner fuel standards. Since April 2025, a limit of a maximum of 50 ppm in petrol has been applied (source: SGS INSPIRE).

The Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA), the regulator for midstream and downstream activities, informed the ILT in March 2024 that it is reviewing fuel standards in collaboration with the Standard Organization of Nigeria (SON). In addition to leveraging the potential of the Dangote refinery, they are also doing this to align fuel standards with the 2020 ECOWAS Directive on Harmonised Specifications for Automotive Fuels. This brings the latest standards more in line with the policy rule in the Netherlands.

Consultation and Ipieca

In the consultation, companies and industry organisations indicate that a broader level playing field is of great importance.

After the Netherlands has committed itself to achieving a level playing field in the ARA area and is taking initiatives towards other countries, the sector also has a role to play. Ipieca was also present at the Benelux Union event in February 2025. Ipieca is the international trade association for the oil and gas sector that is committed to strengthening environmental performance and social responsibility in the energy sector, including [cleaner fuels](#). On its website, it states that: '[The roundtable was focused on the global harmonisation of fuel standards and how to stop the exportation of polluting fuels to countries outside the European Union and European Economic Area](#)'.

Internationally operating oil companies are invited to also work on a level international playing field from within the sector. Together with Ipieca, UNEP and other stakeholders such as the African Refiners and Distributors Association (ARDA), the African Association of Automotive Manufacturers (AAAM) and banks. This is also in line with [the recommendations of African ministers from 2022](#). Clean fuels are a shared responsibility of importing and exporting countries. The ministers also called on oil companies to support the transition to cleaner fuels by supplying only cleaner, low-sulphur fuels.

Conclusions

- A level playing field throughout the entire ARA zone has been created via the Benelux Union. The coordinated approach will make an important contribution to improving fuel quality in West Africa.
- The tightening of fuel standards in Nigeria as a major importing country is creating a more level playing field for sulphur and benzene content and the presence of metallic additives between the ARA region and other countries exporting fuel to West Africa.

The impact of the policy rule on the export volume from the Netherlands

In order to assess whether the policy rule had an impact on the export volume of petrol and diesel, the ILT monitored the export of these fuels using data provided by Vortexa. Vortexa is an [information platform](#) that provides historic and real-time insight into global ship movements for the transport of crude oil and other energy products.

Loss of diesel export as a result of geopolitical developments

Diesel destined for export consisted mainly of blend stocks from Russia. Russia's invasion of Ukraine in 2022 and subsequent EU sanctions had already had major consequences for global oil supplies and the European diesel market before the policy rule was introduced. Diesel exports from the Netherlands to lower and middle-income countries have fallen sharply. This means that this evaluation mainly concerns the export of petrol from the Netherlands to West Africa.

Petrol exports from the Netherlands

Since the policy rule came into effect, petrol exports from the Netherlands to West Africa have declined. The causes of this are:

- A partial relocation of production from Amsterdam to other ports, especially Antwerp.
- The decline in fuel consumption in Nigeria and surrounding countries due to the abolition of the subsidy scheme in Nigeria in 2023 and the resulting high petrol prices.

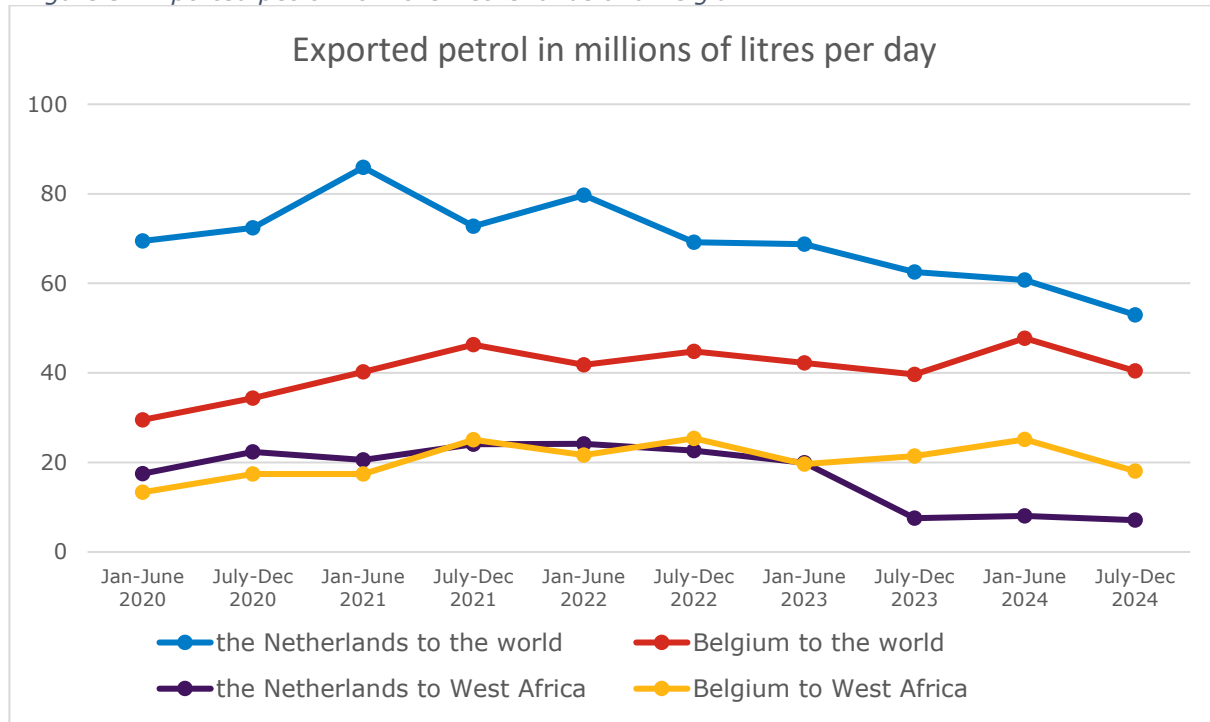
The relocation of petrol production destined for West Africa to Antwerp

Part of the petrol production for and export to West Africa has been relocated from Amsterdam to Antwerp. Figure 3 shows that Belgium has become the main fuel exporter to West Africa. This decline in the export of petroleum products from the Netherlands to West Africa is also evident from [figures from Centraal Bureau voor de Statistiek, CBS \(Statistics Netherlands, in Dutch\)](#) for 2023. The CBS gave 3 reasons for the decline: the lower oil price, stricter fuel requirements to prevent air pollution and the abolition of the subsidy scheme for petrol in Nigeria. It cannot be ruled out that the EU sanctions against Russia also had an influence on the decline.

The Port of Amsterdam aims to develop from a storage and transshipment port for fossil fuels into a port where sustainable energy is produced and imported. Such as hydrogen, synthetic fuels and biofuels. Of the 7 strategic goals that the port has been pursuing since 2020, 2 concern growth in non-fossil turnover and storage capacity for alternative fuels.³ And the port seems to be succeeding in this. From the [2024 annual report \(in Dutch\)](#): 'The growth of non-fossil cargo flows and new activities makes our revenue flows more diverse. The aim was to grow turnover from non-fossil activities to 65% of total turnover in 2024. This target is amply achieved (69% in 2024)'.

[The Port of Amsterdam wants 73% of its total turnover to come from non-fossil activities by 2028 \(in Dutch\).](#)

Figure 3: Exported petrol from the Netherlands and Belgium



Source: graph compiled by the ILT based on data from Vortexa

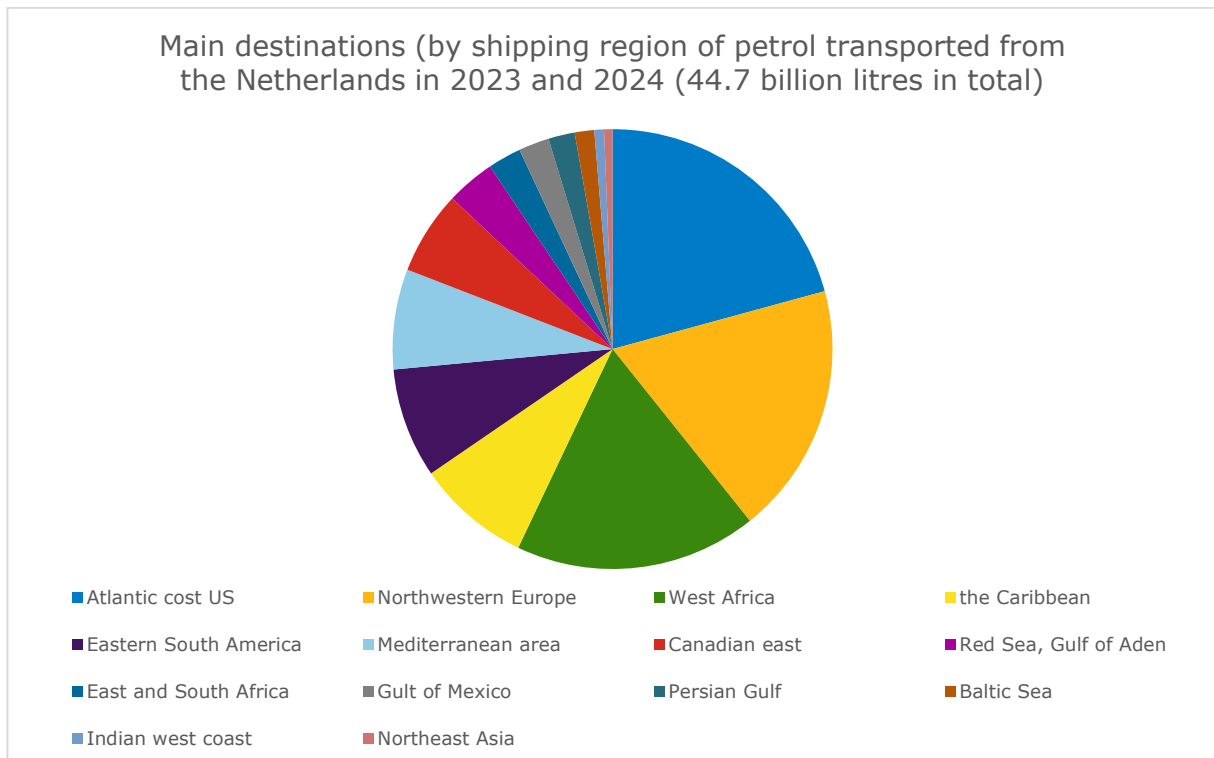
Despite declining exports to West Africa, the Netherlands is still a major exporter of petrol worldwide: in 2023, it was the third-largest exporter (after the US and Singapore). In 2024, it was the fifth-largest due to changes in the global refining landscape and oil production flows.⁴

In the period 2023-2024, the Netherlands was the second-largest exporter of petrol to West Africa after Belgium. This indicates that traders operating globally have redistributed their product portfolio, in the course of which:

- Production and terminal space that consequently became available in the Netherlands was partially filled with the production of higher-quality petrol for other markets. This is shown in Figure 4.
- Part of the production of West African petrol from Amsterdam has been relocated to other ports.

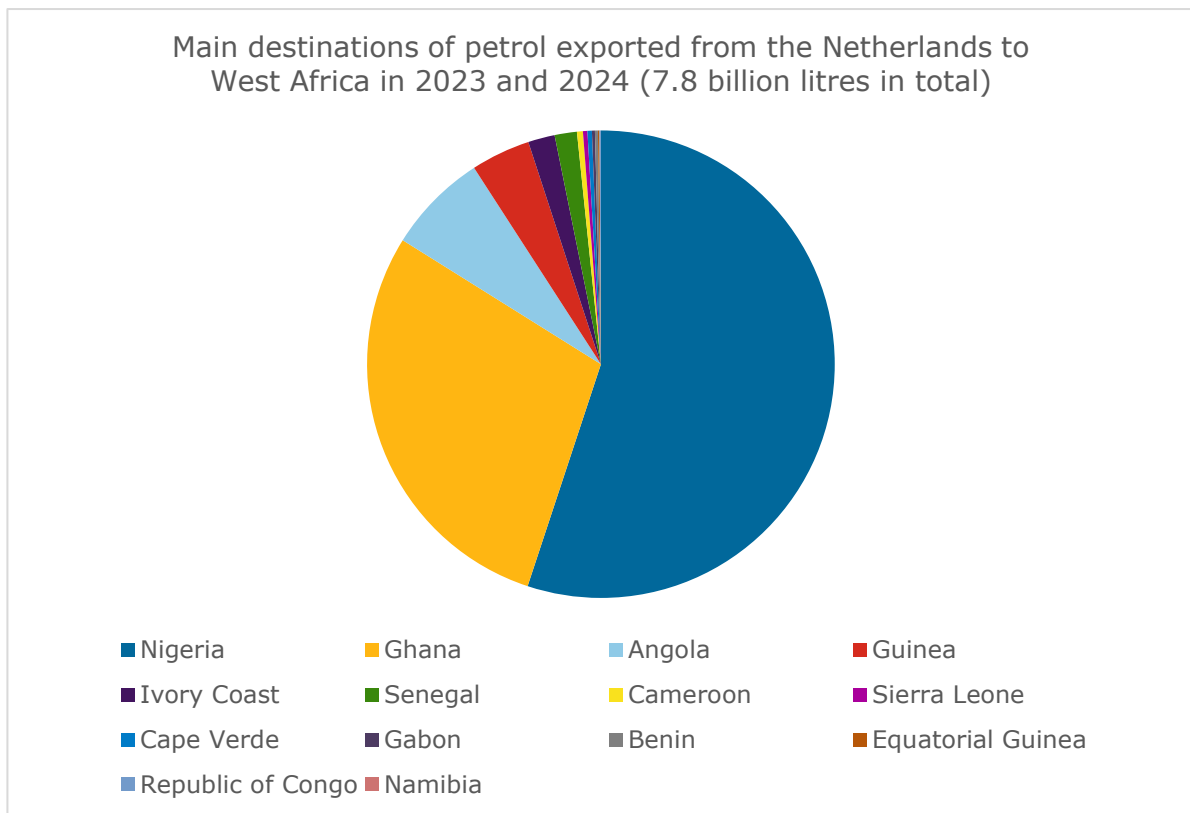
Nigeria remained the main destination in West Africa for petrol exported from the Netherlands, followed by Ghana. This is shown in Figure 5.

Figure 4: Global petrol destinations



Source: graph compiled by the ILT based on data from Vortexa

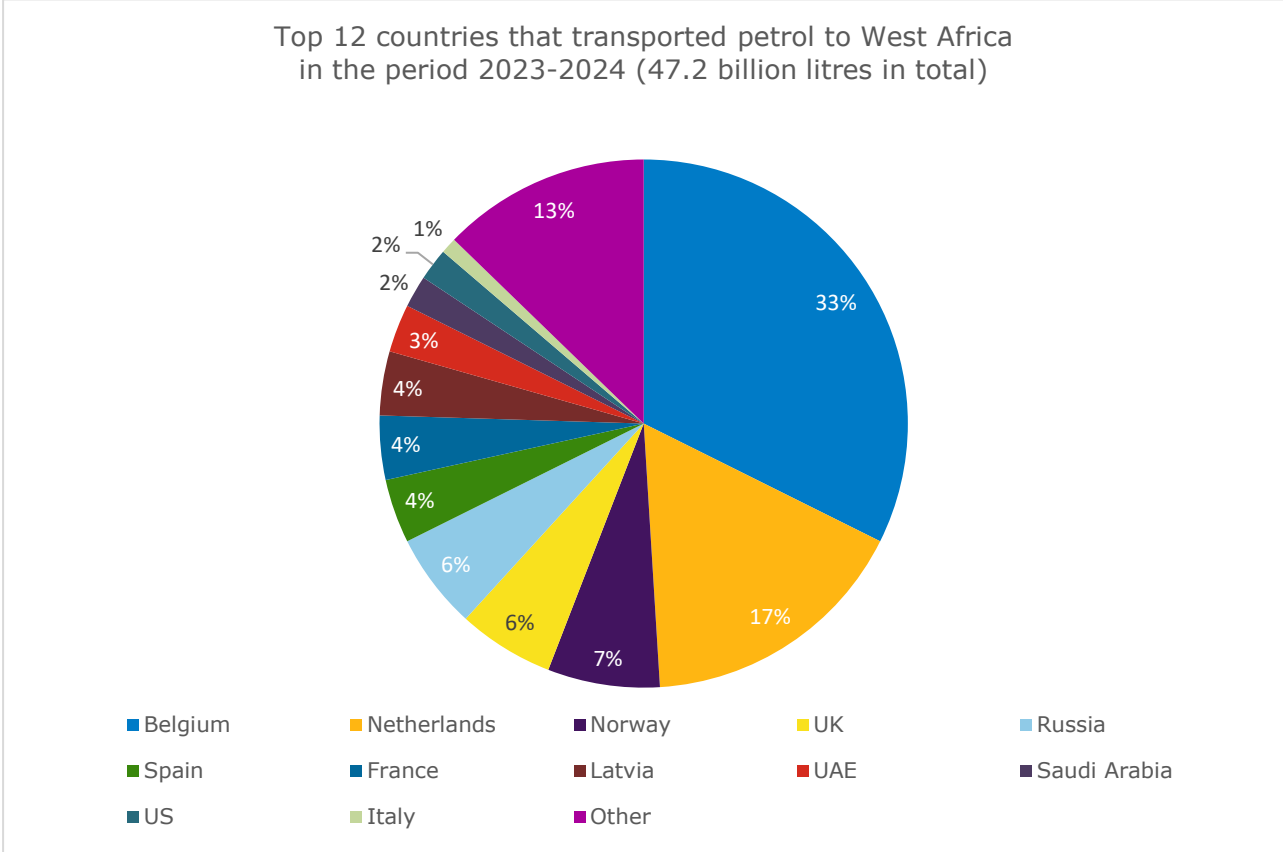
Figure 5: Global petrol destinations



Source: graph compiled by the ILT based on data from Vortexa

In 2023 and 2024, approximately half of the petrol imported by West Africa came from the Netherlands and Belgium. Between 1 January 2023 and 31 October 2024, each day an average of 64,6 million litres of petrol departed for West Africa, almost half of which from the Netherlands and Belgium. This is shown in Figure 6.

Figure 6: Origin of petrol

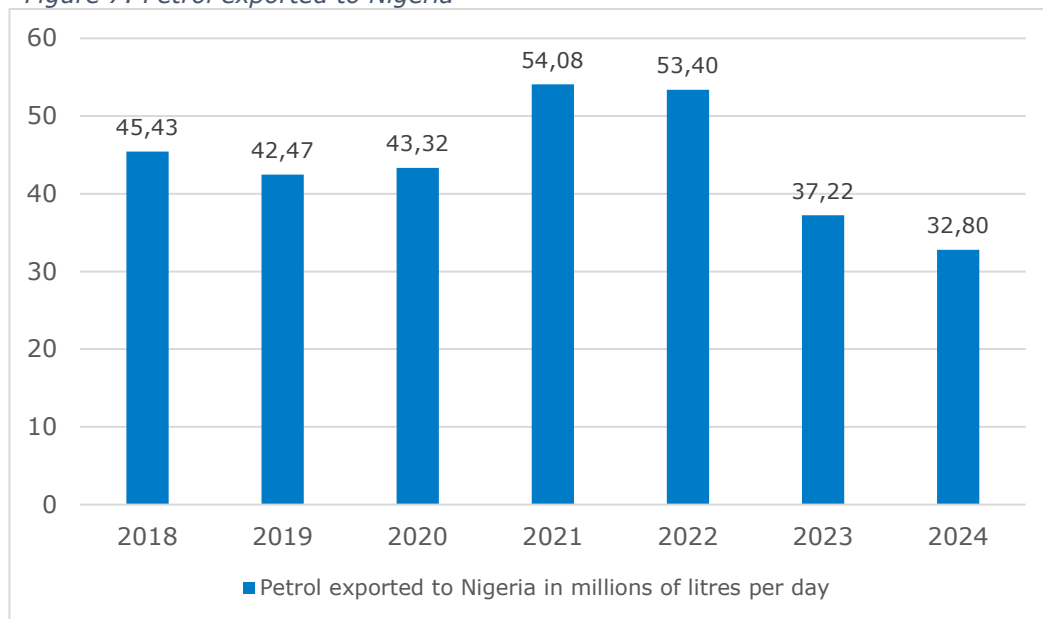


Source: graph compiled by the ILT based on data from Vortexa

Falling import demand from Nigeria

In June 2023, the Nigerian government abolished government subsidy on petrol. This resulted in higher petrol prices and reduced consumption, causing the demand for petrol to fall sharply for a long time. For example, Figure 7 shows that Nigeria's imports averaged 32.8 million per day in 2024. In 2022 this was 53.4 million litres. This impacted export volumes from the ARA area. Especially those from Amsterdam and to a lesser extent those from Antwerp.

Figure 7: Petrol exported to Nigeria



Source: graph compiled by the ILT based on data from Vortexa

New oil refinery in Nigeria

In 2024, the largest African oil refinery was taken into operation in Nigeria. The Dangote refinery has a capacity of 650,000 barrels per day and is expected to be fully operational from the second quarter of 2025. It is also expected that from mid-2025, after an upgrade, the refinery will produce petrol with a sulphur content of less than 55 ppm (SGS INSPIRE). At full capacity, the refinery should be able to produce approximately 50 to 60 million litres of petrol per day. That is enough to meet the demand for petrol in both Nigeria (currently about 40 million litres per day) and neighbouring countries. The dependence on imports from the EU could decrease strongly as a result.

However, it is difficult to predict how large the role of the Dangote refinery will be in meeting the regional fuel demand in West Africa. The refinery cost about USD 20 billion (more than EUR 18.5 billion) and operates in an international market. Analysis of Vortexa data shows that the Dangote refinery's share of petrol in the Nigerian market remained relatively limited in 2024. This share will increase significantly in 2025 when the refinery is operating at full capacity, but this will also depend on agreements between the Nigerian government and the refinery. Terminals in the Netherlands started receiving fuel products from the Dangote refinery for the first time in 2024.

The long term is even more difficult to predict, as African demand for oil products is expected to rise. Estimates range from 4.1 million barrels per day in 2024 to 5.3 million in 2040 (source: SGS INSPIRE). That would be an increase of almost 30%.

Latest developments in 2025

Belgium's adherence to the policy rule in the Netherlands appears to have redistributed petrol exports from Europe to West Africa again. With increasing importance for British ports (Immingham, Pembroke) after Belgian and Netherlands ports, and Norway (Mongstad) and Spain (Barcelona, Huelva) as the 4th and 5th largest export countries of petrol to West Africa.⁵

Conclusions

- Petrol exports from the Netherlands to West Africa have seen a decline. This is partly due to the relocation to Belgium and reduced import demand from Nigeria. At the same time,

total petrol exports from the Netherlands to the rest of the world are declining to a lesser extent. Changes in the global refining landscape and trade flows of petroleum products play a role in these declines.

- In 2023 and 2024, approximately half of the imported petrol in West African countries came from the Netherlands and Belgium.
- Despite the potential impact of the Dangote refinery on import demand in West Africa, it is reasonable to assume that fuel imports will continue. It is also therefore important to continue working on better fuel standards worldwide and to continue monitoring market flows.

Impact on petrol quality in West African countries

The direct impact of the policy rule on the quality of West African petrol sold at the pump is difficult to measure. There are too many variables. Such as the exact share of petrol exports from the Netherlands in a country's imports in a given period, data and location of samples, whether or not the country has its own fuel production, etc. To obtain the best possible picture, the ILT purchased data from SGS, a globally operating testing, inspection and certification company. SGS collects samples of petrol and diesel sold at petrol stations globally twice a year and tests them for quality. Even with this data, it is difficult to give a clear answer.

Without providing definitive answers, the ILT makes the following general observations based on various SGS reports and historical to recent SGS sample data.

Sulphur

The actual sulphur content in petrol in many African countries where SGS carried out sampling in 2023 is lower than the standards applied by the countries. There is a downward trend. The policy rule appears to be well aligned with developments and contributes to the actual reduction of the sulphur content in African petrol. This could mean that exporting, trading and African countries could move smoothly and quickly to introduce low standards for sulphur content in petrol. Such as max 50 ppm or even max 10 ppm. The East African Community (EAC), consisting of 8 countries in East Africa, has been implementing stricter fuel standards since 2015. It recently approved a proposal to reduce sulphur in fuels from a maximum of 50 ppm to a maximum of 10 ppm. This decision will be formalised in May and published in July 2025. Member States then have 6 months to incorporate it into their legislation.

Benzene

- Benzene levels still appear to be an underexposed problem in several African countries. Global fuel data collected by SGS in 2023 (and sometimes 2024) shows high concentrations of benzene (up to 4.7%) in petrol from several West African countries, including Senegal, Gabon and Guinea. A high level of aromatics is also noticeable in various petrol shipments and countries (including Nigeria). This is higher than the 35% limit that applies to petrol used in the EU.
- Vortexa data shows that Belgium was the main supplier of imported petrol to Senegal, Gabon and Guinea in 2023 and 2024. This shows how important it is that since September 2024, the same rules apply in Belgium as in the Netherlands.
- SGS data, including recent samples from late 2024 and early 2025, shows that in recent years, average benzene levels in Nigeria have been around 1%. Belgium and the Netherlands are the main suppliers of petrol to Nigeria.

Metal-containing additives based on iron and manganese

- SGS Worldwide Fuel Survey data from 2023 (and part of 2024) shows that iron-based metallic additives in petrol are only found in African countries such as Senegal, Mali, Ghana, Cameroon, Gabon and Guinea. The average levels can reach up to 8.25 milligrams per litre. By comparison, the average iron content in Europe was less than 0.1 milligrams per litre in most countries. All petrol samples collected by SGS in the Asia-Pacific, Eurasia and Western Balkans regions were also found to contain iron levels of less than 0.1 milligrams per litre.
- The same applies more or less to metallic additives based on manganese. The highest concentrations reach up to 47 milligrams per litre and are found in African countries such as Guinea, Senegal, Cameroon and Nigeria. In addition, there is no downward trend, as in Asian countries, for example.

- This is consistent with the AAAM's view that concentrations of these 2 additives still significantly exceed recommended limits and have a negative impact on many vehicles in both West Africa (Ivory Coast, Ghana), East Africa (Tanzania, Rwanda) and Southern Africa (South Africa, Namibia).

The ILT discussed their experiences with the policy rule with various African countries. Several countries informed the ILT that they consider the lack of well-equipped test laboratories for independent fuel testing an obstacle to the use of clean fuels. This is probably also why there is limited data available on fuel quality in these countries.

Explanation

Before the introduction of the policy rule, petrol exports from the Netherlands accounted for approximately 30% of imports in the West African region. Compliance with the policy rule at the same export volume should therefore have a noticeable effect on fuel quality in countries such as Nigeria.

In practice, the effect on quality at the pump in these countries is difficult to measure. The sulphur content in petrol has improved compared to the concentrations in the first ILT study from 2018. This also applies to the benzene content in Nigeria, for example. This effect is not observed for benzene in other countries and metal additives in general.

This is largely due to the fact that exporting traders have (partly) relocated the production of petrol destined for West Africa to other countries.

Explaining this observation depends on the perspective from which it is viewed.

From the ILT's perspective, this can be seen as confirmation that the fuel sector, with some exceptions, does not take social responsibility. And that it lets its choices depend entirely on market position and maximisation of the revenue model.

From the sector's perspective, this may confirm that tightening the duty of care is only possible in an international level playing field. And that individual market parties will otherwise choose to relocate to other countries, as was predicted by the sector in the consultation on the policy rule.

With one exception, trading companies located outside the EU, for example in Switzerland and the United Kingdom, have opted for (partial) relocation of production or 'finish-blending' to other countries based on their market position and financial profit model.

VOTOB says its members have suffered financial losses in turnover due to the relocation of fuel production abroad. No substantive explanation is given. The decline in fuel exports after the policy came into effect has also been strongly influenced by other market-defining developments. These include sanctions on Russian petroleum and blend products, the loss of the diesel export market, a sharp decline in Nigerian demand and changes in the international refining landscape.

According to West African countries, the policy rule is in line with and supports the tightening of quality standards that they have implemented or are in the process of implementing in recent years. More ECOWAS countries are expected to switch to low-sulphur fuels by 2025, with Dangote's new refinery near Lagos, Nigeria, expected to produce petrol with a sulphur content of less than 55 ppm from mid-2025 after an upgrade (SGS INSPIRE).

Conclusions

- The impact of the policy on the quality of fuels in the receiving West African countries is difficult to measure. Nevertheless, the policy rule has supported the agreements made by the West African countries and the developments in the market. The impact could have been greater if international traders had not avoided the policy rule and had maintained their production in the Netherlands at the same volume.
- The ILT and the sector have different interpretations of this. Namely, based on social responsibility on the one hand, and on international financial market mechanism on the other.

- Several West African countries appreciate the fact that the Government of the Netherlands, as an important exporting country, has taken co-responsibility for improving fuel quality in West Africa.

Financial feasibility of compliance with the policy rule

The explanation of the policy rule states that the technical feasibility of the policy rule does not pose a problem. After all, higher quality petrol has been produced for the European market for a long time. This was endorsed by the companies consulted at the time.

During the consultation on the draft policy rule, traders claimed that better quality fuels are more expensive and that African countries cannot afford this. Allegedly, compliance is not financially feasible for traders until there is a level playing field in a highly competitive international market.

Paragraph 2 states that the policy rule has indeed been circumvented by traders by relocating the process of production/purchasing and later increasing the octane number of the petrol with metallic additives to other countries.

In collaboration with Argus, the ILT has further examined the financial feasibility of the policy rule. Argus is a market analysis firm that assesses and publishes global commodity prices, including fuel prices, and analyses market trends.

Argus has published an analysis of the basic indices on which petrol pricing for West African countries was based until at least the end of 2024. This publication has been added to this evaluation as an appendix.

The analysis shows that traders use the Eurobob benchmark when purchasing petrol in Europe. This is EU quality petrol, before ethanol is added (E5 or E10, 5 to 10% ethanol) intended for the EU market. Ethanol is an octane booster. Ethanol-free petrol used to make E5 petrol usually has a RON of around 92 to 93; for E10 petrol, it is around 91. In terms of octane number, that quality is fairly comparable to that of West African petrol, the RON of which is usually at least 91.

But for more than 2 decades, this petrol has been traded against the benchmark for more expensive EU petrol with a minimum of 95 octane and a maximum of 10 ppm sulphur when delivered to Nigeria, the largest consumer country in the region. This Euro 95 petrol is of a (much) better quality than that used in Nigeria.

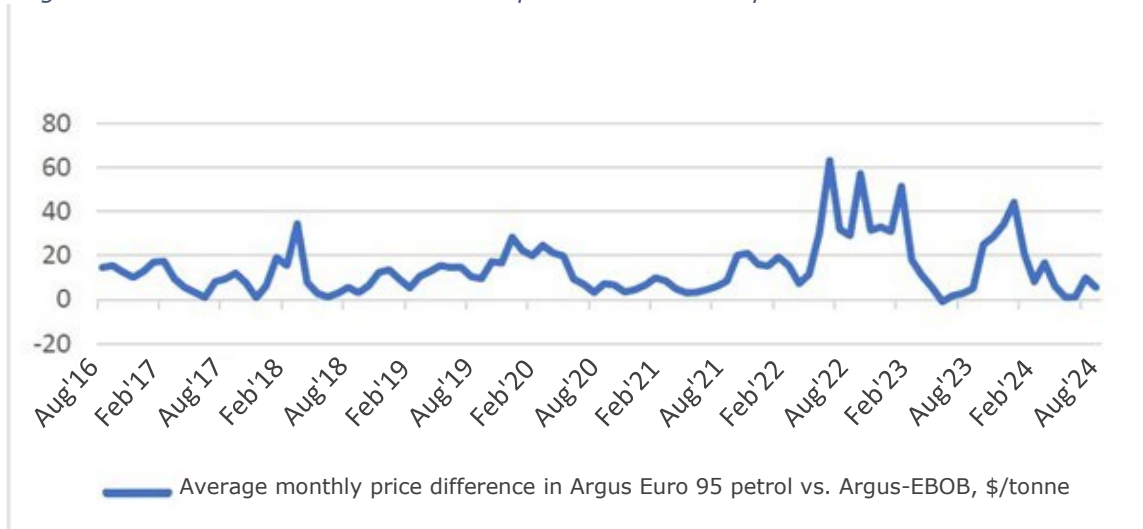
The difference between Eurobob and Euro 95 petrol was sometimes more than \$50 per tonne, while the petrol supplied was of much lower quality, such as:

- RON 91 instead of RON 95 for petrol used in the EU
- A significantly higher sulphur content than a maximum of 10 ppm
- A higher benzene content than a maximum of 1%
- Use of cheap octane boosters (such as the metallic additives) instead of the more expensive blends used in Europe, such as isomerates, reformates or oxygenates (such as MBTE).

This price difference between Eurobob and Euro 95 petrol benefited the profit margin of the traders who actually export the fuels to Nigeria and other West African countries. These are often fuel traders who purchase petrol in Europe on a FOB basis (Free-on-board: the costs of transport by tanker are not borne by the seller) and then trade it at a higher price when delivering it to West African countries. In theory, the difference in quality can be compensated by discounts on the final price. In practice, this does not seem to happen for the various quality parameters such as sulphur, octane number, benzene and metal additives.⁶

Analysis by the ILT and Argus of limited Nigerian data shows that high prices have been paid for the quality received. Argus' publication strengthens the substantiation of the financial feasibility as stated in the explanation of the policy rule.

Figure 8: Price difference between EBOB petrol and Euro 95 petrol



Source: Argus Media

The situation is changing: first the abolition of the petrol subsidy system in 2023 and then the launch of the Dangote refinery, which uses Eurobob to determine the prices of its sales. This is more in line with the pricing for the quality actually traded. Exporters and importers therefore have to be much more competitive, which results in increasing use of that benchmark in the Gulf of Guinea. Nigerian buyers are becoming increasingly accustomed to this.

This new market reality better aligns with the ambitions and mandate of the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA). It was established in 2021 to improve the governance structure, promote competition and increase market transparency, among other things.

This does not mean that the entire industry is on the same page. However, the start-up of the Dangote refinery and the efforts of the Benelux and West African countries, including Nigeria, to improve the quality of traded fuels and imports from Europe appear to be paying off. This applies both to the quality of the fuel and to greater transparency and fair prices.

Conclusions

- The Argus publication points out that Nigeria and other West African countries have been paying high prices for the quality they import for years.
- This price difference has historically been beneficial to the profit margin for traders who export the fuels and sell them to Nigeria or West African countries. It often concerns fuel traders operating from Switzerland or the United Kingdom who purchase petrol in Europe on a FOB (Free-on-board) basis and then trade it at a higher price upon delivery to West African countries.
- The quality prescribed in the policy rule is better aligned with the price at which petrol was traded upon delivery to Nigeria and other West African countries. The policy rule (2023-2024) led to a fairer price-quality ratio by bringing the quality more into line with the benchmarks used.

References

¹ Octane number is important for the smooth running of a petrol engine. Research Octane Number (RON), is a measure of the octane number. Metallic additives increase the octane number. The desired octane number can also be obtained in other ways.

² [Argus](#) monitors and analyses developments in the market and publishes prices for commodities, including those of the various oil products, based on detailed information.

³ Port of Amsterdam, [Annual reports of 2020, 2021, 2022, 2023, 2024](#)

⁴ For example, refinery capacity in the Middle East, China and India has increased almost every year since 2000. By 2023, these areas together accounted for more than a third (34%) of global capacity. This is a share comparable to that of the United States, Western Europe and Japan. One example of changing trade flows in oil is India. Before 2022, petroleum products from India were mainly exported to neighbouring countries in Southeast Asia. Following the EU ban on imports of petroleum products from Russia, India's exports to Europe increased and Europe became the top destination for India's petroleum products exports by 2023. [US Energy Information Administration: Outlook on global refining to 2028](#)

⁵ Vortexa data

Apache, November 2024 *"Exportverbod voor "dirty diesel" treft mysterieuze Belgische oliehandelaar"*

⁶ When entering into a fuel deal, whether it is a spot or long-term contract, sellers and buyers use formulas to determine the difference to the benchmark. This difference is also called premium or discount. Premiums and discounts are applied to benchmarks, which amounts to adding or subtracting costs from the reference price negotiated between physical trading partners for a specific product. In addition to the trader's margin and freight costs (which result in a premium), the delivered price may also reflect quality differences in benchmarks and other factors such as unloading costs, date/time and general terms and conditions.

Appendices

1. Letter from African Association of Automotive Manufacturers (AAAM) dated 23/09/2024 (appended)
2. TNO, 2024, [Petrol fuel additives effects on vehicle technology and the environment](#)
3. Argus Media, 2024, [Media Briefing Note, Evolving gasoline pricing in Nigeria](#)



AAAM

African Association of
Automotive Manufacturers

Attention:

M. Wassenaar
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c.c. [REDACTED], Program Manager

September 23rd 2024

THE NEGATIVE IMPACT THAT LOW QUALITY FUELS IS HAVING ON VEHICLE TECHNOLOGY IN AFRICA AND IMPORTANCE OF THE ONGOING 'DUTY OF CARE' IN DUTCH ENVIRONMENTAL LAW TO SUPPORT AFRICA'S MOVE TO CLEANER FUELS

Dear Mr Wassenaar,

The African Association of Automotive Manufacturers (AAAM) focuses on the expansion and deepening of the automotive industry across Africa by working with governments to shape policies and provide support that will attract investors, unlock the economic potential of the continent, and align a global network of stakeholders committed to the development of the automotive industry in Africa. Our members include global automotive companies & Original Equipment Manufacturers (OEMs). We see ourselves as an authoritative body that provides automotive knowledge, insights, and advice considering the full automotive value chain in Africa.

One of our key topics is that of cleaner fuels for cleaner vehicles. The introduction of cleaner fuels is playing a major role in unlocking the potential for modern technology vehicle sales in Africa that will provide significant reductions in vehicle emissions, meaningful improvement in air quality and overall climate emissions. As an added benefit, the overall cost of ownership will also decline. The introduction of cleaner fuels and vehicles in Africa is a priority for our members. The African continent has started to introduce standards for cleaner fuels and vehicles; however, there remains challenges from both internal and external influences that the AAAM is addressing through its Fuels and Emissions Working Group.

One such challenge is that of the use of metallic additives in petrol (automotive gasoline) as a cheap method to increase fuel octane. These metallic additives are extremely detrimental to engine and emissions hardware and over time they render the emissions equipment ineffective and eventually can lead to engine failure.

For this reason, European fuels standards limit the levels of manganese or expect any fuel that contains metallic additives to be labelled as such. This second approach has rendered all fuel in Europe metal-free and has led to the development of all modern vehicle technology to operate with metal-free fuels to comply with emissions regulations.

Fuel analysis results from across the African continent has indicated that fuel additives with manganese and/or iron are being utilised to increase fuel octane. Recommended limits are concentrations of 2mg/litre for manganese and 1 mg/litre for iron. Levels of these two additives far exceed these acceptable levels and have negatively impacted on many vehicles from West Africa (Ivory Coast, Ghana) to East Africa (Tanzania, Rwanda) to Southern Africa (South Africa, Namibia). The negative impact can be explained as follows:

- Once the contaminated fuel burns in the combustion chamber, both iron oxide and manganese oxide deposit itself onto spark plugs, catalysts and oxygen sensors.
- The rate of deposit depends upon the concentration of the metallic additive in the fuel, the engine technology, the driving style, speed and distance. One fact is clear: when the recommended limits are exceeded the fuel will have negative impacts upon engine and emissions hardware.
- Manganese in fuel combined with fuel octane below 91 can lead to low-speed-pre-ignition (lspi) resulting in engine damage (i.e. piston failure and vehicle breakdown).
- Manganese combined with higher octane fuels will deposit and block the catalyst over time to the point that the surface starts to break apart; well-before that point the catalyst is ineffective in oxidising the harmful emissions thus rendering the emissions equipment unproductive.
- Once Iron oxide deposits onto the sparkplugs it creates hot spots for fuel pre-ignition. This pre-ignition leads to poor vehicle driveability and eventually renders the vehicle un-driveable. Iron oxide is known to reduce spark plug life by up to 90% (1). In such cases spark plugs must be replaced.
- Iron oxide is also known to deposit onto injectors and catalysts. Like manganese oxide, the iron blocks the catalyst surface rendering the catalyst ineffective.
- Based upon known cases, high concentrations of iron (above 10mg/l) affect driveability within a very short period of driving distance (within 2,000km), whereas manganese at levels exceeding 6mg/litre may block catalysts at 60,000km, but these distances may vary depending on driving behaviour and metallic concentration. In both cases these metallic additives poison the engine hardware and emissions systems rendering them ineffective to reduce harmful emissions.
- The impact of these metals on the oxygen sensors are equally harmful. These oxides create a barrier between the exhaust gas and the sensor material; the result is that sensor is no longer capable of performing it's function correctly, causing emissions to increase.

Another major finding from our work is that many fuel testing laboratories in Africa are not equipped to test for these metallic additives, which has led to the release of fuels by African Regulatory offices from inaccurate or incomplete fuel certificates.

The overall result is that the vehicles do not operate as intended, the emissions equipment does not function to protect the environment and the cost of ownership escalates. Some of the research work and documentation supporting the strict limitation of metallic additives in automotive petrol is listed below for further reference.

We are writing this letter to you to inform you of the significant importance that the 'DUTY OF CARE' in Dutch Environmental Law is playing in our efforts for cleaner fuels in Africa. While we (AAAM) continue to lobby with local oil industry, local Governments and key stakeholders (e.g. United Nations Environment Program (UNEP) and Partnership for Cleaner Fuels and Vehicles (PCFV)) for better quality fuels in African markets, the efforts of your Inspectorate and Government play a substantial role in curbing poor fuel quality exports into Africa. We acknowledge the support and guidance from your team and strongly request for ongoing activities to encourage further European markets to adopt this approach.

We ask for your ongoing support. Please do not hesitate to contact us further for any information of details we have outlined in this letter.

Thank you for your attention. Yours faithfully,

██████████
CHIEF EXECUTIVE OFFICER

██████████
FUELS and EMISSIONS WORKING GROUP

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