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# How much do Mexicans pay for regulation in the transportation of oil products?

Alan Israel Jiménez-Pérez<sup>1</sup>, Francisco Ortiz-Arango<sup>2,\*</sup><sup>1</sup> Universidad Panamericana, Mexico City 03920, Mexico<sup>2</sup> Facultad de Ciencias Económicas y Empresariales, Universidad Panamericana, Mexico City 03920, Mexico\* **Corresponding author:** Francisco Ortiz-Arango, [fortizar@up.edu.mx](mailto:fortizar@up.edu.mx)

## CITATION

Jiménez-Pérez AI, Ortiz-Arango F. (2024). How much do Mexicans pay for regulation in the transportation of oil products? *Journal of Infrastructure, Policy and Development*. 8(5): 3695. <https://doi.org/10.24294/jipd.v8i5.3695>

## ARTICLE INFO

Received: 15 December 2023

Accepted: 17 January 2024

Available online: 7 May 2024

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**Abstract:** The new oil derivatives transportation scheme proposed by the 2013 Mexican Energy Reform allowed new participants to enter the sector. The new legal framework requires fulfilling many requirements and corresponding duties for the transportation of oil products. The Mexican government already has an institution dedicated to measuring the regulatory cost of each federal procedure. This work aims to quantify the regulatory costs associated with the procedures and their compliance to obtain permits for transporting oil products by truck. We use the standard cost method to measure these costs, considering all associated costs. The results showed that two government offices did not adequately measure these costs. They did not consider relevant information on frequency and opportunity costs, resulting in undervaluation and leading to wrong expectations. As a result of this research, we provide a more accurate way of estimating these costs, which brings greater certainty in the budgeting of these projects and, therefore, increases the probability of survival and success.

**Keywords:** compliance; Mexican energy reform; oil products; regulatory cost; standard cost method; transportation

**JEL classification:** H83; K23; O13

## 1. Introduction

In August 2013, Mexico's president, Enrique Peña Nieto, presented the constitutional reform to the 27th article to the Mexican Congress. Principal changes in the reform regarding hydrocarbons consisted of allowing private companies to enter into activities related to oil and oil products. Before these changes, *Petróleos Mexicanos* (Pemex), the national enterprise, was the only firm allowed to participate in upstream activities, like oil exploration and extraction, and downstream activities, like pipeline transportation and storage of oil products.

The Mexican Energy Reform gave new faculties to two federal institutions to grant the new hydrocarbon markets. The National Commission of Hydrocarbons (CNH), created in 2008, would be responsible for administering contracts and assignments related to the exploration and extraction of crude oil. On the other hand, the Energy Regulatory Commission (CRE) would grant permits for all the downstream activities (commercialization, transportation, storage, distribution, and gas stations). Since 2013, CRE has been able to establish regulations on these activities.

Before Energy Reform, the participation of private companies in the downstream activities of hydrocarbons had some limitations. The participation of private companies in the transportation of oil products by pipeline and ships was restricted to Pemex. Private companies hired by Pemex made transportation by railroad, and

transportation by trucks was made by private companies hired by Pemex and by Pemex itself. The Energy Reform allowed private companies to participate in all transportation activities and not only to provide service to Pemex. It is worth saying that the Energy Reform stated that transporters would not be the ones who own the oil products; instead, they only provide the service of transportation while the property remains on those who commercialize the products.

Transportation by truck has some characteristics that make it different from other transportation types; undoubtedly, the essential feature is its many suppliers. For instance, oil product transportation by pipeline is still controlled by Pemex; even though CRE has granted two permits to private firms, its relevance is minimal due to their oil production volume. Transportation by railroad is given by concessionaries, which transport passengers and general cargo. There are six railroad concessionaries (all of them private) whose railways cover different areas (in very few regions, there are railways from different companies) (Federal Commission for Economic Competence, 2019). Finally, Pemex continues to dominate the transport by vessels. **Table 1** shows the percentage distribution of the four transportation media of oil products in Mexico without considering the transportation of crude oil.

**Table 1.** Mexican oil products transportation media, without considering the transportation of crude oil.

<b>% Oil products transportation media</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Tanker vessels	10.9%	8.0%	8.7%	9.8%	10.7%	11.7%	8.6%
Pipeline	77.6%	78.1%	75.2%	71.2%	67.6%	67.4%	68.7%
Railroad	3.3%	3.1%	2.9%	2.8%	2.7%	4.0%	5.7%
Truck	8.1%	10.8%	13.2%	16.2%	19.0%	16.9%	17.1%

Source: Pemex (2022).

In contrast to other nations, the significance of truck transportation in Mexico is underscored by its substantial contribution to the overall volume of petroleum product transport. In the period leading up to the Energy Reform in 2016, it constituted 8.1% of the total transported volume without considering the transportation of crude oil. However, in 2020, this percentage surged to 19%, establishing itself as the second most pivotal mode of transportation, surpassing even tanker vessels. This notable escalation in truck utilization can be attributed predominantly to a decline in pipeline usage (around 10%), precipitated by illicit activities, coupled with a state policy explicitly favoring the replacement of pipeline transportation with truck-based alternatives.

As with every regulation, this new legal framework implied compliance costs. The new regulation created procedures for those interested in getting a permit to transport oil products by truck. By law, every new regulation emitted by a federal office must prove that the benefits derived from that regulation exceed its costs. The Ministry of Energy, the federal office in charge of emitting the Energy Reform, evaluated its costs and presented them to the National Commission of Regulatory Improvement (Conamer)<sup>1</sup>, the Mexican agency responsible for evaluating the new regulation. Four years later, Conamer made a new evaluation of the regulation costs, but the difference between both evaluations was enormous. This paper evaluates the regulation costs that the Energy Reform caused in the transportation of oil products.

A comparison between evaluations is then made to identify the weakness of the calculations made by both federal offices. In fact, neither the Ministry of Energy nor the Conamer estimations adequately calculate the regulatory cost for the oil product transportation by truck activity. This work's importance consists of presenting the first exhaustive evaluation of the regulation costs for oil product transportation by truck activity, derived from the Energy Reform.

The remainder of this paper is organized as follows. Section 2 indicates the new regulation frame that came with the Energy Reform and describes the procedures needed to get and hold a permit for oil product transportation. Section 3 presents the Standard Cost Method, the evaluations made by Conamer and the Ministry of Energy, and the foremost critics of both evaluations. This section concludes with a new calculation of the regulation costs. A discussion of the results obtained and their comparison with the official evaluations is presented in section 4. Finally, section 5 has the conclusions of this work.

## **2. Regulation and procedures**

### **2.1. Permits granted by CRE after the energy reform**

The eleventh transitory article of Hydrocarbons Law required those already doing the now-regulated activities to get the corresponding permit before the end of 2015. **Table 2** shows that most of the permits granted by CRE to offer transportation by truck were given in 2015 and decreased yearly until 2018. There is no limit to the number of units (trucks) a permit grants, so each permit can be considered from one truck to more than a hundred.

**Table 2.** The number of truck transport permits and units granted.

<b>Year</b>	<b>Number of transport permits</b>	<b>Number of units granted by permits</b>
2015	1088	9521
2016	486	5298
2017	95	281
2018	67	218
2019	97	222
2020 (until August)	89	280

Source: CRE.

#### **Types of procedures: application, modification, update, obligations, pre-registration**

The regulation of oil product transportation is vast and demands an expert to know it completely. Companies interested in getting an oil product transportation permit must meet several procedures. Since all CRE's procedures are electronic, the first step is to complete registration so the commission evaluates whether it is an eligible individual or firm. Once an individual or a firm is registered at CRE, sending an oil product transportation permit application is possible. Although this procedure has a response time of 64 working days, it can take longer if CRE considers the information does not fulfill the requirements. Article 45 of the Regulation of the

activities referred to in the Third Title of the Hydrocarbons Law (2014) determines the procedure to grant a permit. This procedure states that CRE will examine the application on the first ten working days and, if necessary, will require omitted information from the applicant. Once the applicant answers the requirement, CRE can send a new requirement requesting more information. This requirement can be sent before 30 working days after the applications have been accepted or between 31 and 63 days after. The first case is a warning, and the second is an additional information request. If the information satisfies all the requirements, CRE grants the permit. CRE’s maximum authority grants permit—the Governing Body<sup>2</sup>—and are valid for 30 years.

Once an individual or a firm has gotten the permit, it must comply with certain obligations. For example, oil product haulers are required quarterly to present information on rates, routes, and volume carried, among other data. Yearly, they also must pay a fee and send information about insurance, complaint reports, proof of legal origin of the product, and emergency reports. In addition, permit holders are randomly visited by CRE’s inspectors to ensure they meet their obligations. Lack of compliance with obligations is punished with fines or permit cancelation.

Permit holders can modify, update, suspend, or ask for an anticipated termination by request. Each of these actions is subject to a specific procedure and requirements. For instance, modifying a permit is required whenever the firm has lost control of the company that got the permit or when an individual wishes to cede it or dies. Permit modifications follow the same procedure as applications—with the same terms—and have a lower fee. On the other hand, updates are the procedure that transportation permit holders must follow when they want to modify the destinations granted on the permit or change information about shareholders, locations, or firm’s name.

Nonetheless, the principal use of updates is to add or remove transportation units granted on the permit. **Table 3** shows that updates are the most common procedure related to oil product transportation that is unrelated to compliance. Finally, suspensions are the legal figure to request a break of less than one year in a permit’s obligations. At the same time, early terminations are used to terminate the permit definitively. None of the last two figures has taken place for this activity.

**Table 3.** The number of oil product transportation requests by type of procedure.

Year	Number of applications <sup>3</sup>	Number of modifications	Number of updates	Quarterly obligations	Yearly obligations
2015	1099	0	0	0	1088
2016	477	6	139	6045	1574
2017	95	10	440	6506	1669
2018	82	8	252	6836	1736
2019	149	2	510	7150	1833
2020 (until August)	18	0	129	7668	1922

Source: CRE (2020a).

Updating a permit requires the holder to send CRE a request with the corresponding information. For example, if a firm wishes to add new units to the permit, it must send the same documents required on each new unit’s application request. CRE has three months to approve the update—it does not need to be granted

by the Government Body—and they can send a warning if the information is insufficient. In addition, the CRE technical staff authorizes suspensions and anticipated terminations, which the Government Body does not approve. They also take three months to be authorized and must have all the obligations fulfilled by that time.

## 2.2. The energy reform regulation sets requirements

The specific requirements CRE asks for each procedure are established on legal instruments of different levels. Although some of the requirements are set by Hydrocarbons Law or by regulating the activities referred to in the Third Title of the Hydrocarbons Law, most come from CRE’s legal instruments—agreements, resolutions, or even online warnings. The configuration of this legal framework allows CRE some flexibility in introducing new requirements if needed. Simultaneously, this flexibility gives CRE discretionary power that could harm firms by implementing arbitrary requirements.

As **Table 4** shows, the application is the procedure that demands more information, both by form and by unit. On the other hand, a permit update requires less information, although it demands four pre-existing documents for each new unit a permit holder would like to add.

**Table 4.** Requirements by type of procedure.

	Registration	Application	Modification	Update	Quarterly obligations	Yearly obligations
New docs.	1	11	6	2	7	4
Pre docs.	6	3	2	0	0	0
New docs. by unit	0	1	0	0	0	3
Pre docs. by unit	0	11	0	4	0	0

Source: CRE (2020b).

## 3. Evaluation of the cost of regulation

### 3.1. Methods of evaluation

There are currently many methods to quantify the impact of regulation; regardless of which one is chosen, the method must:

- Identify the economic impacts of a policy and whom it affects.
- Identify the most significant impacts.
- Quantitative or qualitative analysis evaluates the most significant impacts (European Commission, 2005).

Despite it has some theoretical critiques (OECD, 2006), and that it varies depending on the country that implements it (OECD, 2009), one of the most common methods is the cost-benefit analysis, which consists of the evaluation of all costs and benefits in monetary terms (Roosen, 2010). This method expresses costs and benefits in terms of money to be compared (Commonwealth of Australia, 2016). Three key factors must be taken into account when using the cost-benefit analysis. First, it must consider a balance between an issue’s financially quantifiable and subjective aspects (Hasting, 2010). The second factor involves defining a period for the evaluation; a

period long enough is required to ensure that all relevant impacts are considered (Conamer, 2014). Finally, the discount rate choice is crucial because of the impact on the calculation it may have (Roosen, 2010). Hedonic pricing, travel costs, and contingent valuation are examples of cost-benefit methods.

Multicriteria analysis is another helpful method associated with the evaluation of regulation. It provides an overall ordering of options, from the most preferred to the least preferred option (Department for Communities and Local Government, 2009). It is generally used when a cost-benefit analysis is not feasible because of the difficulty of pricing an asset (human life, for example) (Aquila et al., 2019). A series of steps define the multicriteria analysis: i) establishing the evaluation objectives, ii) identifying evaluation criteria, iii) finding the options to be evaluated, iv) evaluating the expected performance of each option, v) weighting criteria, vi) combining weights and evaluations (Conamer, 2014). Assigning scores based on weights and evaluations makes comparisons possible between options (European Commission, 2017). However, results highly depend on the weights and criteria (even functions) selected (Panos et al., 2013).

Another popular method to evaluate the cost of regulation is the break-even analysis. This method is used when the expected benefits from regulation are clear, but the regulation's effectiveness in generating those benefits is uncertain (OECD, 2008). In addition, break-even analysis may be helpful when regulation is implemented for the first time; thus, there is little or no experience estimating its effectiveness (Conamer, 2014). This method compares costs and benefits derived from regulation and calculates the time necessary for the benefits to be greater than the costs. Although equilibrium analysis is a popular evaluation method, it has been criticized for being static, overly simplistic, and unable to capture all the benefits. (Ustundag, 2013).

### 3.2. Standard cost method

Standard Cost Method (SCM), a cost-benefit analysis, is currently the most common method employed worldwide to evaluate the impact of compliance costs. This method generally consists of identifying every activity firms or individuals must carry out to complete a procedure. Next, each activity's cost is calculated considering the time and resources needed. Finally, all activity costs are added and then multiplied by the times they must be presented to authorities (Standard Cost Model Network, 2016):

$$RC = \left[ \sum_j^M \left[ \sum_i^N (p_i t_i) \right] \right] * q_j$$

where:

*RC*: regulatory cost of a procedure.

*j*: necessary documents to complete the procedure.

*i*: necessary activities to get the document *j*.

*p*: price consists of a tariff, wage costs, and overhead for administrative activities.

*t*: time spent to complete the activity *i*.

*q*: quantity of the procedure *j*, which is the product of multiplying the procedure's frequency by the population of firms or affected individuals.

As the SCM Network (2016) refers to in its manual regarding this method, it must consider the data and opinions from firms that had made this procedure and the government agency staff that evaluates and approves it. It also has to be considered that this method is “a time-consuming process in which it is important to document the individual considerations on which each choice is based”.

### 3.3. The standard cost method used by Conamer

As in many other countries, Mexico uses a regulatory impact assessment to sustain legislation’s political and administrative process (German Government, 2004; The White House, 2011). Since the late 1990s, regulatory impact assessment has been a norm in industrialized countries integrated into global trade (Jacobs and Associates, 2006). Conamer is the federal office that registers all the federal procedures and evaluates the new regulations to guarantee that their overall benefits exceed their regulatory cost. One of its duties consists of proposing improvements to federal agencies’ procedures to decrease regulatory costs. Conamer splits the costs into the administrative burden and opportunity costs. The calculation of the administrative burden by Conamer is made by using the SCM. On the other hand, Conamer uses the following formula to estimate the opportunity cost of a regulation (Conamer, 2012):

$$OC_i = \left[ \frac{(K_i + C_i) * r}{M} \right] * t_i$$

where<sup>4</sup>:

*OC*: opportunity cost.

*K<sub>i</sub>*: gross capital formation of the economic subsector.

*C<sub>i</sub>*: fixed costs of the economic subsector.

*r*: daily rate of an annualized yield of the national bonds.

*M*: economic units for the specific economic subsector.

*t<sub>i</sub>*: resolution term (time spent by the authority to approve a procedure).

The sum of both components—the administrative burden and the opportunity cost—is called “Total Economic Cost”. Using this methodology, Conamer has estimated the regulatory costs of the oil products transportation application<sup>5</sup>. Estimations are shown in **Table 5**.

**Table 5.** Conamer’s estimation of the oil products transportation application (Mexican pesos).

<b>Administrative burden</b>	
Documents, activities, and time spent per application	\$1,024.94
Annual frequency	1496
	\$1,533,316.22
<b>Opportunity cost</b>	
Gross capital formation of the economic subsector	\$83,228,633,000.00
Fixed costs of the economic subsector	\$243,953,575.10
Daily discount rate	0.015260%
Economic units	41
Resolution term (days)	126

**Table 5. (Continued).**

<b>Opportunity cost</b>	
Frequency	1496
	\$58,563,157,462.32
Total Economic Cost	\$58,564,690,778.55

Source: Conamer.

### **3.4. Mandatory evaluation of the costs and benefits of regulation in Mexico**

According to article 69 of the General Law of Regulatory Improvement, a federal authority must evaluate its costs and benefits when it emits a new regulation. Therefore, in 2014, when the Energy Reform was implemented, the Ministry of Energy sent Conamer its evaluation of the costs of regulating the activities referred to in Title Three of the Hydrocarbons Law. The assessment presented by the Ministry of Energy considered the following data shown in **Table 6**:

**Table 6.** Ministry of Energy estimation of the oil products transportation regulation (Mexican pesos).

<b>Costs of regulation</b>	
Analysis and evaluations of the application	\$20,791.65
Estimation horizon (2015–2019) (years)	5
Unitary cost	\$20,791.65
Estimated economic agents	154
Total cost	\$3,201,914.10

Source: Conamer.

### **3.5. Critics on the conamer and the ministry of energy evaluations**

Although Conamer’s approach to evaluating the regulatory impact of the procedures related to oil products transportation comes straightforward from the SCM, it can be improved by considering its specific features. One of the improvements would be considering all the current requirements asked by CRE to complete the processes. Full identification of the information obligations is necessary to begin assessing the effects on a business’s administrative burden (European Commission, 2009). For instance, Conamer uses the information given by federal institutions signed on the Federal Register of Procedures and Services (RFTS) to estimate the costs of a procedure. However, this information is not always correct or updated (Conamer, 2020). For example, the requirements registered on the RFTS for the most common procedure regarding oil product transportation. The description given in the RFTS does not consider that for each new unit incorporated, the permit holder must include documents such as a truck invoice, permit issued by the Ministry of Communications and Transport, circulation card, policies of insurance, and registration, which must be submitted to the Security, Energy and Environment Agency (ASEA). In this sense, Conamer is underestimating the real regulatory cost.

Another refinement to Conamer’s evaluation of regulation costs is to make some changes regarding the estimation of opportunity cost. Many elements of the



opportunity cost calculation are hard to obtain or estimate. Considering this situation, it is not uncommon for Conamer to use only the economic subsector's gross capital formation to evaluate the opportunity cost. Nevertheless, gross capital formation is not an accurate measure of the opportunity cost since the economic subsectors include many activities that differ by a wide margin. For instance, to estimate the opportunity cost of the procedures related to the transportation of oil products, Conamer uses the economic subsector denominated "Oil and gas extraction" (National Institute of Statistics and Geography, 2013). The gross capital formation of this economic subsector is exceptionally high because it encompasses activities such as well drilling, so Conamer overestimates the opportunity costs for the transportation of oil products.

On the other hand, the Ministry of Energy evaluation considers just the application as the only procedure that causes regulation costs. As seen in **Table 3**, the application is not the most common procedure, and its frequency declined rapidly as the number of obligations presentations grew yearly. Moreover, even considering just the application, the Ministry of Energy only considered the associated fee cost. It did not take into account any other document required by this procedure. The estimation also failed to give a close number of economic agents requiring permits to transport oil products. Even when the Ministry of Energy did consider just a period, it cannot be regarded as a complete evaluation because of its limitations.

### 3.6. A comprehensive evaluation

To estimate the cost of regulation of oil products transportation, we used the SCM by steps. This way, it is easy to identify the main components of the regulatory costs. The costs considered are those costs related to compliance incurred by private entities to operate within the rules set down by the policy (Treasury Board of Canada Secretariat, 2007). First, the administrative costs for each procedure are calculated as follows:

$$AC_p = C * \sum_{d=1}^4 [D_d * T_d]$$

Following the European Union's (2006) recommendation regarding the breakdown of administrative requirements into information obligations, the requirements ( $d$ ) are divided into four groups: i) new documents, ii) pre-existing documents, iii) new documents per unit, and iv) pre-existing documents per unit. Pre-existing documents are those that the applicants must comply with another authority's regulation even when CRE would not require them. New documents are specific for compliance with CRE's regulations. For example, truck invoices and security policies are examples of pre-existing documents. Simultaneously, filling out a CRE form and writing a report indicating the number of units are examples of new documents. It is essential to separate documents required once per procedure, and those required by each unit, as a document required by each unit, will have a different frequency. Therefore, the documents ( $D$ ) are multiplied by the time ( $T$ ) spent to get each. After summing all the documents, the result is multiplied by the cost associated with getting that activity done ( $C$ ).

The total administrative cost per procedure must consider the times each procedure will take place, i.e., its frequency (FQ), and the fees charged by the authority to present it:

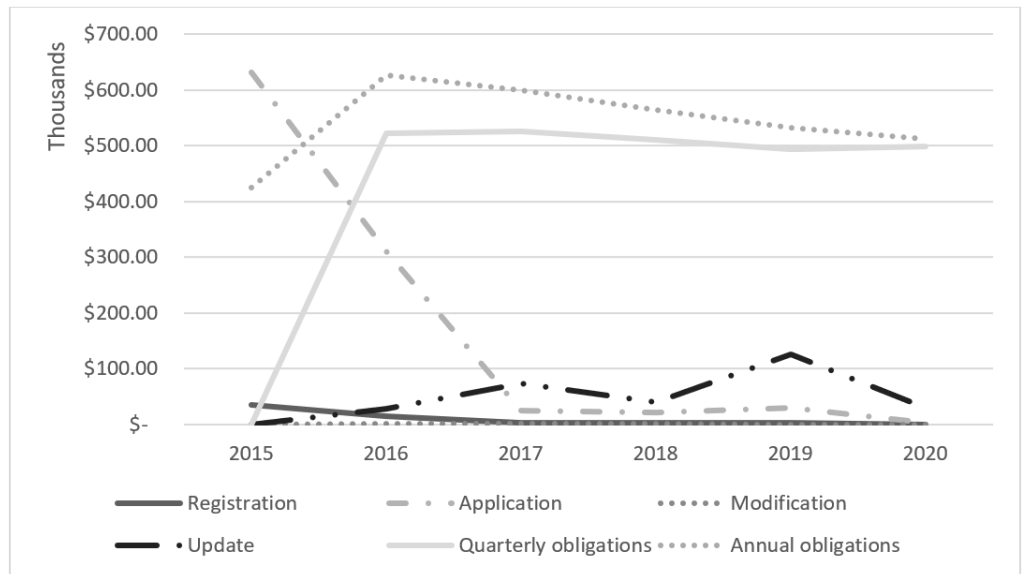
$$TAC_p = [AC_p + fee_p] * FQ_p$$

To evaluate the opportunity cost of the regulation, consider the days it takes for CRE to give a definitive answer to the applicants for each procedure, its frequency, and the daily opportunity cost (DOC):

$$OC_p = days_p * DOC * FQ_p$$

#### 4. Results

Considering that it would take 5 minutes to complete a pre-existing document and 20 minutes for a new one<sup>6</sup> and that the mean salary of a Mexican secretary was \$38.7 Mexican pesos per hour (National Institute of Statistics and Geography, 2015), the administrative cost of each procedure considering its frequency is shown in **Figure 1**. Unsurprisingly, the regulation cost associated with applications was the highest and quickly dropped, as most permits were granted in 2015. **Figure 1** also shows that obligations are now the costliest procedure for preparing documents to send to CRE.



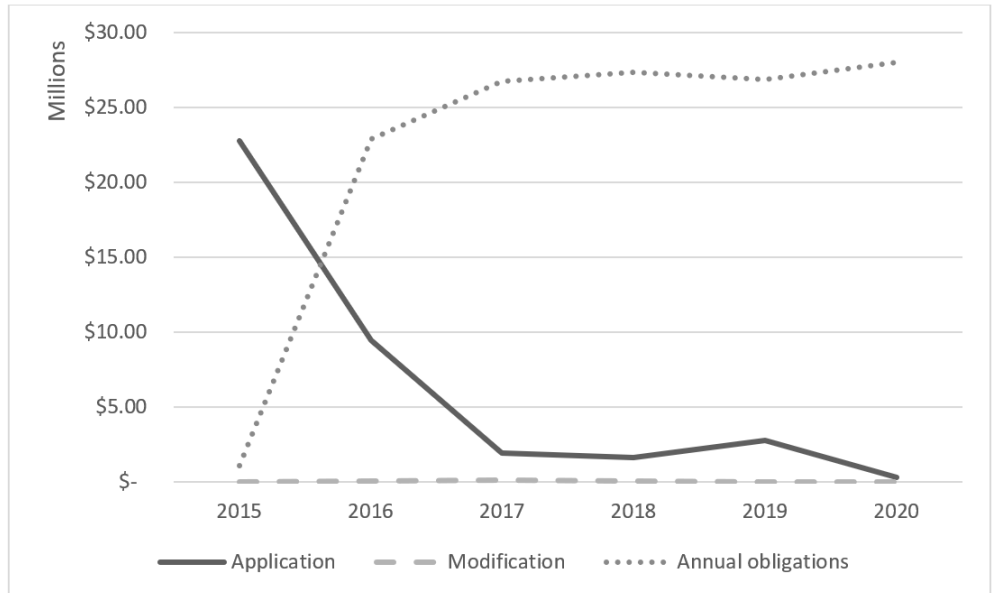
**Figure 1.** The administrative cost of procedures considering their frequency.

Note: All amounts are given in 2015 Mexican pesos, considering the Interbank Equilibrium Interest Rate for 28 days.

On the other hand, the costs that come from fees are much higher than those related to administrative costs. Costs related to fees are more than 20 times higher than administrative costs. In **Figure 2**, it is shown the cost of fees for each procedure that is not free. Annual obligations are the procedure that gives more resources to CRE, as applications fell from 2015 to 2017 at a great pace.

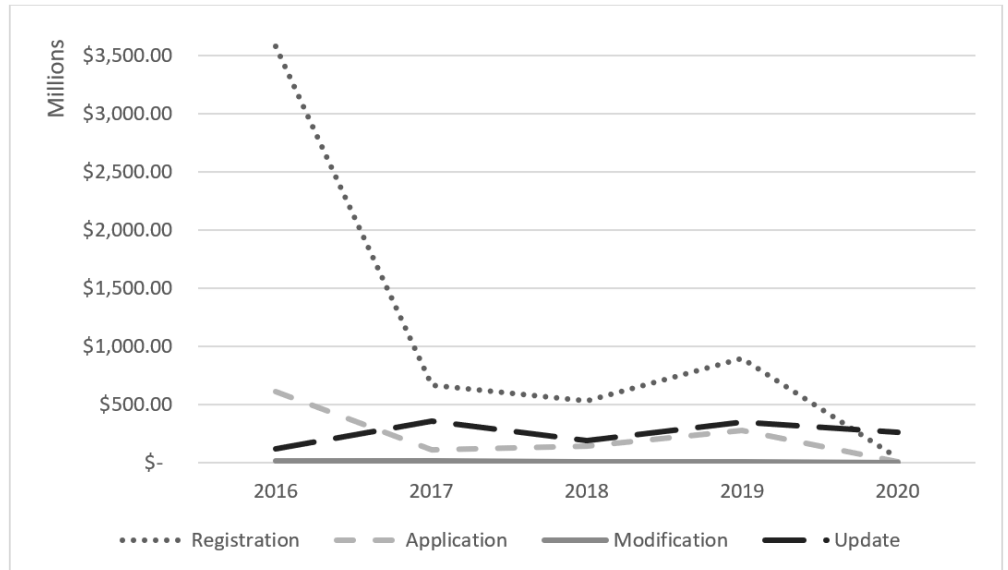
To calculate the opportunity cost, Pemex considered an open contract specifying the daily amount it would give a truck company to rent its units to transport oil products (Pemex, 2018). Since permit holders do not receive an answer to the presentation of annual or quarterly obligations, and the business continuity of transporters is not interrupted, the associated opportunity cost of these procedures is

zero. As a result, opportunity costs were null in 2015 because the carriers could continue providing their services while CRE reviewed their permit application. The opportunity cost of the procedures is shown in **Figure 3**.



**Figure 2.** Fees of procedures considering their frequency.

Note: All amounts are given in 2015 Mexican pesos, considering the Interbank Equilibrium Interest Rate for 28 days.



**Figure 3.** The opportunity cost for each procedure.

Note: All amounts are given in 2015 Mexican pesos, considering the Interbank Equilibrium Interest Rate for 28 days.

Although controversial<sup>7</sup>, it is illustrative to calculate the total cost of regulation by adding the estimated administrative costs, fees, and opportunity costs. The sum by year of these concepts is shown in **Table 7**, and the corresponding disaggregation is available in Appendix.

**Table 7.** Total cost of regulation by year.

<b>Year</b>	<b>Total cost</b>
2015	\$24,971,907.28
2016	\$4,349,094,039.87
2017	\$1,170,159,447.62
2018	\$898,212,650.01
2019	\$1,549,723,303.63
2020	\$336,023,494.44
Total	\$8,328,184,842.85

Note: All amounts are given in 2015 Mexican pesos, considering the Interbank Equilibrium Interest Rate for 28 days.

The estimated total cost can be disaggregated into its three main components. As **Table 8** shows, the most significant source of costs by far comes from the opportunity costs, representing up to 97% of the total costs for the entire period. It is also worth noting that fees are much higher than administrative costs: fees spent to comply with the regulation are more than 20 times the costs associated with the activities needed to present the procedures. These results show that a significant regulatory improvement would include reducing opportunity costs, for example, by reducing the days CRE can spend to give a definitive answer.

**Table 8.** Participation in main components of regulatory costs.

<b>Year</b>	<b>Administrative</b>	<b>Fees</b>	<b>Opportunity costs</b>
2015	4.37%	95.63%	0%
2016	0.03%	0.75%	99.22%
2017	0.10%	2.46%	97.44%
2018	0.13%	3.23%	96.64%
2019	0.08%	1.91%	98.01%
2020	0.31%	8.27%	91.42%
Total	0.09%	2.06%	97.85%

## 5. Discussion

Although the federal government agencies in Mexico must measure every new regulation’s regulatory impact, which has been so since 2000 (Federal Administrative Procedure Law, 2000), compliance is more a requirement for agencies than an instrument to reduce regulatory costs. However, the current case shows how the evaluation made by the agency can be calculated differently by the specialized office (Conamer). In fact, it is a matter of concern that, despite the enormous differences between Conamer’s and the Ministry of Energy’s calculations, the regulation project was approved without further explanation. Moreover, Conamer’s evaluation was made years after that presented by the Ministry of Energy, which shows that the initial Conamer’s validation of the Ministry of Energy calculation was mistaken.

These results may not derive directly from the lack of legal instruments. Since 2000, Mexican law has included the concept of regulatory improvement and obligated most federal offices to quantify the regulatory costs. Since that year, Conamer has

specialized in those issues and has cooperated with OECD with data and documents. It has also made efforts to promote regional regulatory improvement among the States, principally in the procedures needed to open a business. Political support has also played a role since 2018, when a new general law of regulatory improvement was emitted.

Results like those obtained here show that the current legal arrangement is insufficient to get adequate results. One possibility to improve the legal frame is changing the institutional array so that Conamer becomes an independent office. Being not an office that depends directly on the instructions of the Ministry of Economy would effectively reduce the political influence on Conamer. Another solution may consist of giving more budget to Conamer. On the one hand, this would allow Conamer to hire specialists to evaluate regulations. Nevertheless, on the other hand, it would send a political message to all federal offices about regulation evaluation compliance.

## **6. Conclusions**

Letting private companies participate in similar conditions in Mexico's oil products transportation made implementing a new regulatory framework necessary. Despite mandatory compliance, the Ministry of Energy sent Conamer an evaluation of the regulation costs that only considered one of the oil products transportation procedures. Considering only the corresponding fees, that evaluation underestimated the regulatory costs by evaluating them in \$3.2 million Mexican pesos for five years. Despite having approved that estimation, Conamer estimated the regulatory cost associated with the application four years later. Conamer estimated the procedure's yearly administrative costs at \$1.5 million Mexican pesos and \$58,563 million Mexican pesos for the opportunity costs.

Neither the Ministry of Energy nor the Conamer estimations adequately calculate the regulatory cost for the oil product transportation by truck activity. The Ministry of Energy estimation did not consider any administrative activity needed to comply with the regulation, and Conamer's evaluation used the opportunity cost associated with asset-intensive activities (oil and gas extraction) and incorrectly attributed it to transportation by truck. Furthermore, both evaluations only considered one of five specific procedures to carry out this activity.

Using the SCM, this paper evaluates the effective regulation cost imposed on private companies by the Energy Reform. This estimation considered all the documents that must be attached to the five procedures. It also considered the fees updated yearly and the frequency of each procedure. A total cost of \$8,328 million Mexican pesos was estimated from January 2015 to August 2020, of which 97.85% refers to opportunity costs. It was also found that the amount spent on fees was more than 20 times the administrative costs. From the regulatory improvement perspective, it means that an effective strategy to reduce regulation costs for these procedures consists of cutting CRE's resolution terms and that a second best would be to lower the corresponding procedures fees.

The escalation of regulatory costs harms the investment landscape in transporting oil products by truck. This effect is especially harmful in a nation experiencing

growing reliance on this mode of transport, further exacerbated by the essential role such transportation plays in the movement of goods. The imposition of burdensome regulations distorts the efficient allocation of investments and increases the problem it initially aimed to address.

**Authors contributions:** Conceptualization, AIJP and FOA; methodology, AIJP; software, AIJP; validation, FOA; formal analysis, AIJP and FOA; investigation, AIJP; resources, AIJP and FOA; data curation, AIJP; writing— AIJP; writing—review FOA; visualization, AIJP and FOA; supervision, FOA; project administration, FOA; funding acquisition, FOA. All authors have read and agreed to the published version of the manuscript.

**Conflict of interest:** The authors declare no conflict of interest.

## Notes

1. The General Law for Regulatory Improvement, issued in May 2018, changed the name of the Federal Commission of Regulatory Improvement to the National Commission of Regulatory Improvement. Since their principal faculties remained the same, we used Conamer to refer to both indistinctly.
2. It usually takes longer for a process if CRE's Government Body must approve it because it has to be scheduled on one of its sessions. This body currently has sessions twice a month.
3. The number of applications may not match the number of permits granted due to permission denial and applications sent late in the year and granted the next one.
4. Although Conamer includes the mean income of partners in the opportunity cost formula, it is not taken into account for its calculations due to the lack of information about this issue.
5. Due to administrative restrictions, Conamer only calculates the regulatory cost for selected procedures.
6. It will be shown later that administrative costs represent less than 1% of the total costs, so even if it took ten times more to complete a pre-existing or a new document, administrative costs would remain the lowest among the types of costs defined.
7. Adding actual costs to virtual (opportunity) costs may not be orthodox, but it gives a reference about the total economic costs, as stated by Conamer.

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## Appendix

All amounts in 2015 Mexican pesos.

**Table A1.** Costs involved in the transportation processes of oil products.

	2015			2016			2017		
	Administrative costs	Fee	Opportunity costs	Administrative costs	Fee	Opportunity costs	Administrative costs	Fee	Opportunity costs
Registration	\$35,442.75	-	-	\$14,724.49	-	\$3,575,249,282.66	\$2,739.32	-	\$665,132,851.26
Application	\$631,815.88	\$22,773,478.00	-	\$309,977.84	\$9,461,114.26	\$610,135,133.99	\$25,028.71	\$1,920,119.02	\$111,729,604.40
Modification	-	-	-	\$481.56	\$59,503.86	\$10,734,970.85	\$749.71	\$111,792.95	\$11,289,958.22
Update	-	-	-	\$28,337.70	-	\$119,055,394.82	\$72,767.81	-	\$352,033,342.98
Quarterly obligations	-	-	-	\$522,487.97	-	-	\$525,280.03	-	-
Annual obligations	\$424,603.50	\$1,106,567.15	-	\$626,676.87	\$22,895,953.00	-	\$599,489.59	\$26,715,723.60	-
Total	\$1,091,862.13	\$23,880,045.15	-	\$1,502,686.43	\$32,416,571.12	\$4,315,174,782.32	\$1,226,055.18	\$28,747,635.58	\$1,140,185,756.86
	2018			2019			2020		
	Administrative costs	Fee	Opportunity costs	Administrative costs	Fee	Opportunity costs	Administrative costs	Fee	Opportunity costs
Registration	\$2,189.45	-	\$531,619,296.16	\$3,672.89	-	\$891,814,283.24	\$417.95	-	\$36,484,604.19
Application	\$20,976.22	\$1,610,349.26	\$140,154,178.08	\$29,871.61	\$2,750,595.82	\$274,708,258.57	\$3,936.76	\$316,955.82	\$9,242,766.40
Modification	\$555.37	\$86,897.26	\$9,548,797.73	\$128.18	\$20,421.16	\$3,587,021.46	-	-	-
Update	\$39,794.56	-	\$186,695,459.00	\$125,302.39	-	\$348,822,637.55	\$29,897.70	-	\$261,472,996.73
Quarterly obligations	\$511,070.69	-	-	\$493,498.95	-	-	\$498,536.46	-	-
Annual obligations	\$564,963.17	\$27,358,123.07	-	\$531,973.14	\$26,835,638.67	-	\$512,208.22	\$27,461,174.21	-
Total	\$1,139,549.47	\$29,055,369.58	\$868,017,730.96	\$1,184,447.17	\$29,606,655.65	\$1,518,932,200.81	\$1,044,997.09	\$27,778,130.03	\$307,200,367.32