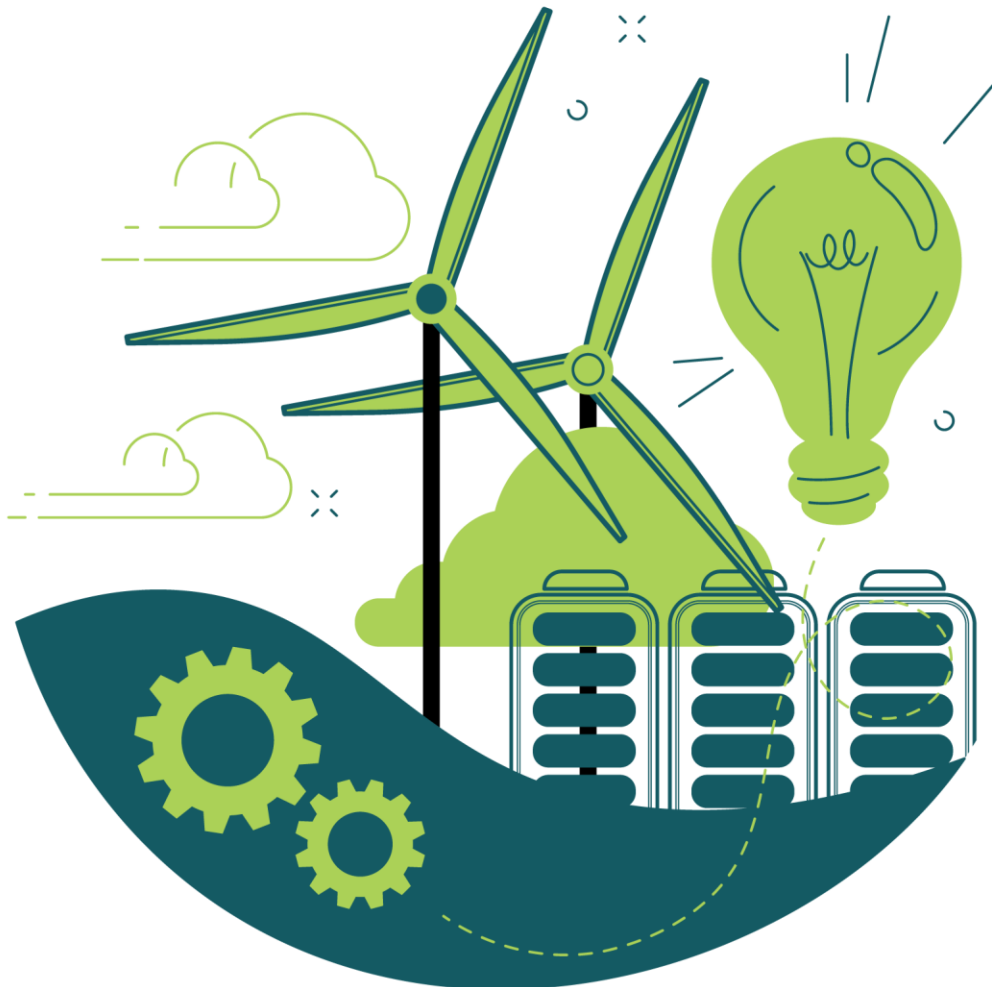


# “ The State of Energy Imports in Pakistan ”



**Energy Unit**

**Sustainable Development Policy Institute**

### Petroleum Import: What Needs to be Done in Transport Sector

The economy of Pakistan is in turmoil on multiple accounts, mainly because of the widening gap between exports and imports. In the month of November 2022, the total import bill of Pakistan stood at \$4.23 billion.

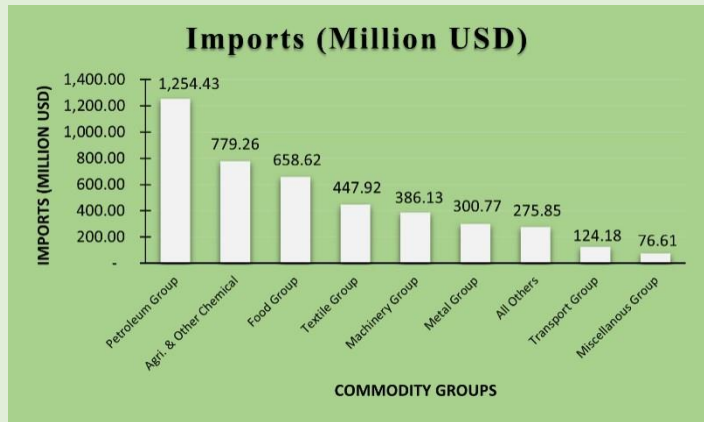


Figure 1: Imports by Commodity Groups in November 2022

The import of petroleum products<sup>1</sup> remained one of the largest contributors to the total imports. In the same month, the petroleum group contributed 29 per cent of total imports (\$1.254 billion) followed by agriculture and chemicals (\$779 million)<sup>2</sup> (Figure 1). Petroleum group has shown a YoY decline of 23 percent (Annex-I).

The petroleum group provides multiple services to the economy, including powering up transportation through petrol, cooking through LPG, and running of factories through LNG. The largest share within this group is of crude petroleum and its products which is \$1.099 billion followed by LNG and LPG that is \$356 million and \$11.9 million respectively. Historically, the imports in petroleum group follow oil prices in the international market. Figure 2 shows the monthly trend of imports of petroleum products. During the COVID-19 lockdown period, the

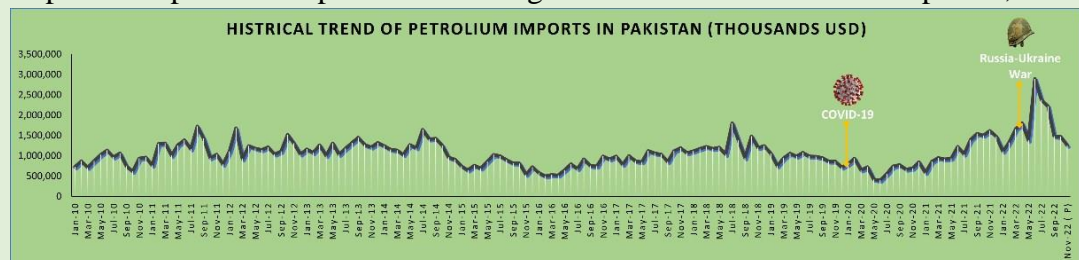


Figure 2: Historical Trend of Monthly Petroleum Imports in Pakistan

<sup>1</sup> Petroleum group consists of imports in terms of petrol (crude and products), LNG, LPG, and others. <sup>2</sup> This group includes fertilizers, pesticides, plastic materials, medicinal materials, etc.

Share of Fuels in Final Primary Energy Consumption in Pakistan (2020)

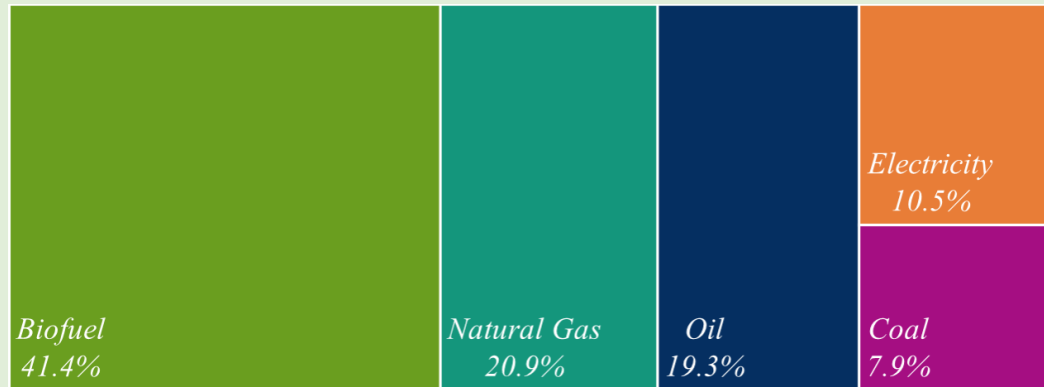


Figure 3: Final Energy Consumption in Pakistan by Fuels

imports hit their lowest level in May 2020. However, the recent increase in the oil prices on account of the Russia-Ukraine triggered the petroleum imports of Pakistan to the record high in June 2022, i.e., \$2.893 billion. Furthermore, the rise in demand due to the reopening of China and supply-side curtailment due to Russia-Ukraine war has caused oil prices to rise in the international market. The increase in oil prices and foreign exchange shortage in Pakistan caused a decline in the country’s oil imports in November 2022, which is the continuation of the trend that started by the end of June 2022.

Oil products are the source of about 19.3 percent of Pakistan’s total energy needs. According to International Energy Agency (IEA), petroleum fulfils 93 per cent energy requirements of the transport sector. The total energy consumption of the transportation sector is 15.20 Mtoe<sup>3</sup> out of which 14.17 Mtoe is powered by petroleum products while the rest of 1.03 Mtoe is powered by domestically produced

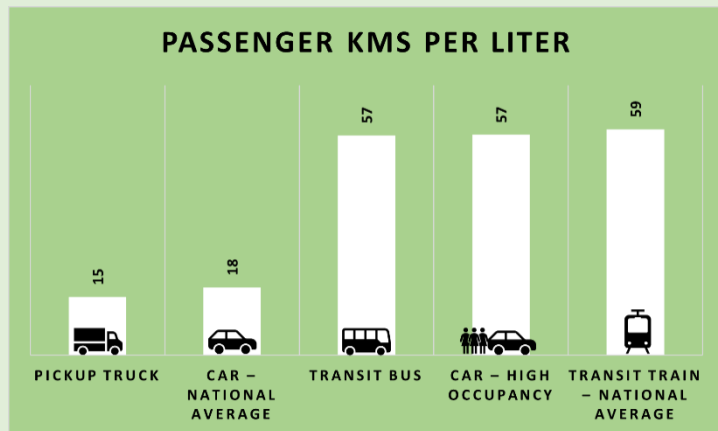


Figure 4: Passenger kilometers per liter - Global Average

<sup>3</sup> Mtoe (Million tonnes of Oil Equivalent) is the unit of energy defined as the amount of energy released by burning one tonne of crude oil.

natural gas. In the industrial sector of Pakistan, the share of petroleum products is 1.23 Mtoe (6 per cent of the total 20.12 Mtoe). The residential sector consumes 1.42 Mtoe energy powered by petroleum products mainly kerosene oil. This composition calls for energy conservation measures as Pakistan has no control over the supply of petroleum products and international scenarios are tilting towards a high-priced oil regime on account of rising demand and supply restrictions. As a way forward to decrease the balance of payment crisis, Pakistan is required to enhance demand-side-management of petroleum consumption. The largest share of imported oil is consumed in the transportation sector. Thus, there is a need to adopt energy conservation and efficiency measures in the sector.

### **Practical Measures to Conserve Energy in Transportation Sector**

86 per cent of total petroleum products is consumed in the transportation sector, which is \$1.07 billion per month<sup>4</sup>. If Pakistan conserve about 30 percent of petroleum consumption every month, it will save \$300 million each month and \$3.6 billion annually. The following practical steps can be implemented in this context.

#### **a. Short-term Solutions**

These short-term solutions mainly focus on demand-side-management.

Firstly, there comes the mass transit system. According to the Alternative Fuels Data Center of the US Department of Energy, transit trains are the most efficient mode of transportation, as the global average of Passenger Kilometers per Liter (PKML) of fuel is 59 for transit trains followed by transit bus 57 PKML, cars 18 PKML and pickup trucks 15PKML. Thus, mass transit system can effectively increase efficiency by 280 per cent as compared to cars.

Second, there is a carpooling measure. A car with a single person covers 18 PKML of fuel, whereas the carpooling increases this ratio to 57 PKML (Figure 4)<sup>5</sup>.

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<sup>4</sup> <https://www.iea.org/sankey/#?c=Pakistan&s=Final%20consumption>

<sup>5</sup> [https://afdc.energy.gov/conservation/public\\_transportation.html](https://afdc.energy.gov/conservation/public_transportation.html)

Thirdly, compliance with fuel economy standards can potentially increase the fuel efficiency by 10 per cent.

Fourthly, regarding speed limits on highways<sup>6</sup>, as per the study conducted by the department of natural resources and energy efficiency - the government of Canada, cars running with a speed of 120 km per hour, consume almost 20 per cent more fuel than a car at 100 km per hour.

Lastly, work from home policy is also a beneficial option. This policy would help to reduce import bills as it significantly reduced the demand for transportation fuels during the COVID lockdown.

#### **b. Long-term Solutions**

Although, the long-term solutions are more sustainable, the cost of these solutions may increase the import bill in short-run in terms of machinery and technology imports.

The first suggestion in this regard is to use electric vehicles (EVs), which can effectively replace fossil-fuel-powered vehicles and help reduce the import bill. Another solution is to probe the alternative transportation fuel. Globally, there is a renewed focus on the development of hydrogen powered vehicles. Green hydrogen<sup>7</sup> can be a more sustained solution for transportation sector. Hydrogen requires combustion engine and provides a longer range than EVs. The shortcomings of hydrogen vehicles are the infrastructural limitation, technology transfer and financial bottlenecks. Although, there are positive developments in China in terms of hydrogen vehicles production, this option seems more futuristic than EVs.

#### **Conclusion**

The economy of Pakistan is undergoing a critical phase in terms of rising imports, outflow of foreign exchange, rising debts and balance of payment crisis. Time is ripe to explore the measures to curtail import bill. In this context, the short run

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<sup>6</sup> <https://www.nrcan.gc.ca/energy-efficiency/transportation-alternative-fuels/personal-vehicles/fuel-efficient-driving-techniques/21038>

<sup>7</sup> Hydrogen which is acquired by renewable electricity through the process of electrolysis of water.

solutions include the demand-side-management through behavioral changes such as utilization of mass transit system, carpooling, efficient practices in transport sector and work from home policies. The long-term solutions such as use of alternative fuels in the form of EVs may increase the financial woes of the country in the short run. Hence, the way forward is the initiation of demand-side-management measures followed by a gradual build-up of long-term solutions such as EVs and other green alternatives of transportation fuels.

**Annex-I**

(Thousand US Dollar)

<b>Commodities and Groups</b>	<b>Nov - FY22</b>	<b>Nov (P) - FY23</b>
<b>D. Petroleum Group</b>	<b>1,619,048</b>	<b>1,254,428</b>
22. Petroleum Products	893,643	683,267
23. Petroleum Crude	484,046	287,549
24. Natural Gas, Liquefied	231,412	266,149
25. Petroleum Gas, Liquefied	9,947	17,422
26. Others	-	41

Source: SBP (2022)