

ICED Discussion Paper

The impact of energy imports on balance of payments and government debt



Overview

Many developing countries are reliant on fuel imports for their energy supply. This is often the case even for countries that have substantial upstream energy reserves. There are countries with large oil reserves that export crude oil while importing refined oil products, because they have no refining capacity of their own. Additionally, many of these countries also subsidise energy, and fossil fuels in particular; subsidies are sometimes applied to end-user prices and are sometimes applied further upstream.

These characteristics of a country's energy sector can have negative economic consequences: a reliance on imports can have an adverse impact on a country's current account, while heavy use of subsidies can hit government budgets hard, reducing the public sector resources available for other priority spending. This discussion paper:

- Analyses these issues and identifies countries where the signs of resultant economic stress are most evident,
- Discusses the causes of and some of the effects of these challenges, using DFID's Whole System Approach (WSA) for the energy sector, and
- Proposes strategies and solutions that could be deployed in countries where DFID operates to mitigate the risks outlined in this paper.

Analysis of the issue

Combining data from IMF and World Bank databases, we have calculated net fuel imports (i.e. fuel imports minus fuel exports) and expressed this as a % of GDP. The results of this analysis are shown in Figure 1. The net exporter countries typically have net exports that account for a large % of GDP. While the scale in the figure only spans the range -10% to +10% (for readability), net fuel exports for many countries in the Middle East and North Africa are well in excess of 10% of GDP. To take an extreme example, net fuel exports in Libya are estimated to be nearly 70% of GDP.

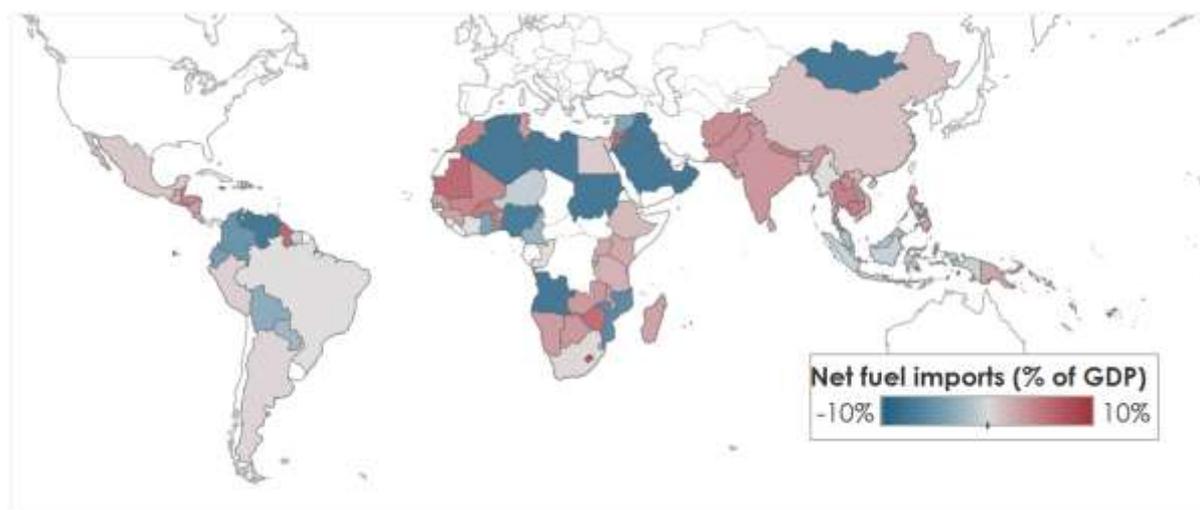
Conversely, imports are spread more evenly. However, there are still many countries where net fuel imports are large as a share of GDP. Figure 2 shows net fuel imports as a % of GDP for countries where this share exceeds 5%. In many cases this list of countries includes very small states including islands, but the list also includes larger countries such as Zimbabwe, Burkina Faso, Nepal, Cambodia, and Thailand.

Dependency on fuel imports can have an adverse impact on a country's current account (that is, in basic terms, the value of exported goods and services less the value of imported goods and services). Figure 3 presents analysis of the impact of fuel trade on the current account:

- The left-hand panel shows the current account position of each country versus net fuel imports expressed as a % of GDP (i.e. the same dataset as is presented in Figure 1 and Figure 2). The figure does show a link between high net imports and a higher current account deficit (as would be expected), but the link is not clear.
- The right-hand panel shows the energy trade balance¹ for countries in Sub-Saharan Africa (SSA) and South Asia, which has been calculated using IEA energy balance data, again plotted against current account positions. This panel similarly shows the adverse impact of energy import reliance on a country's current account.

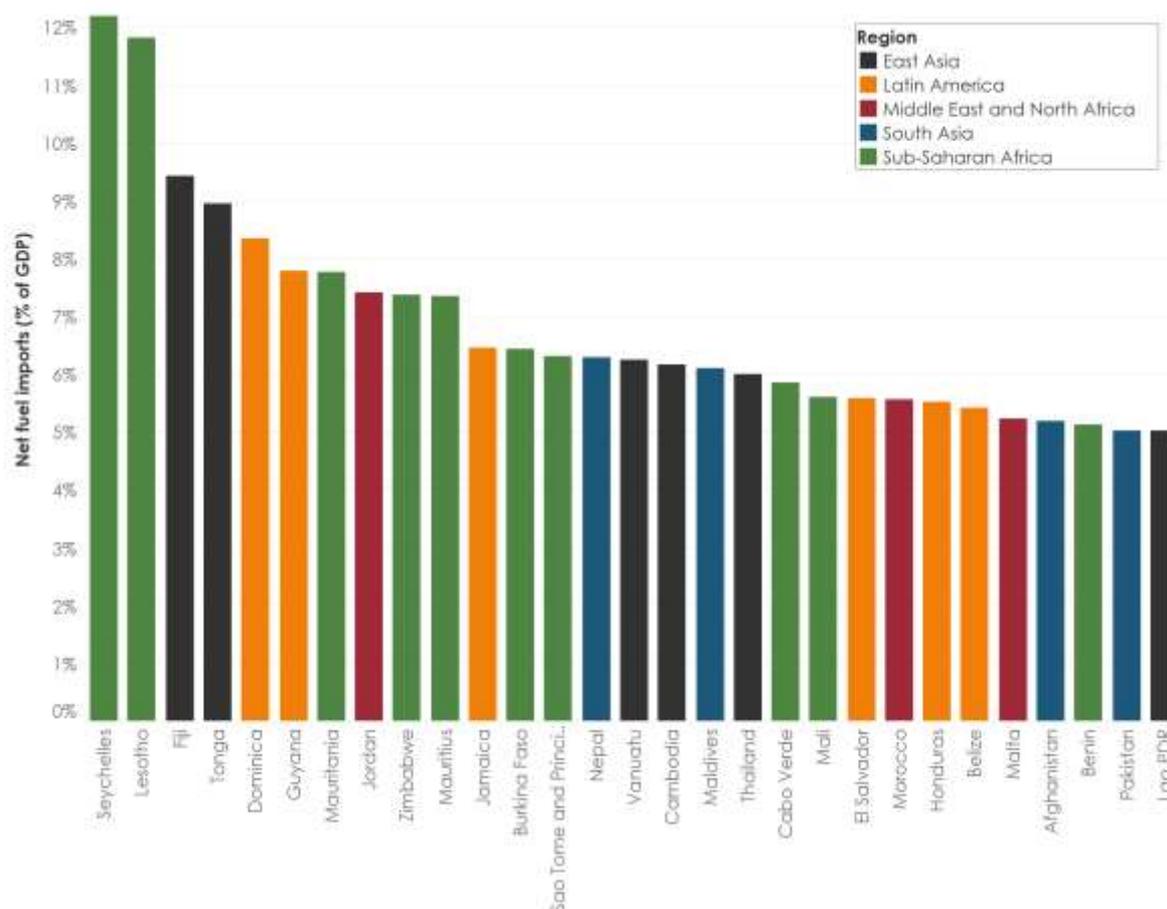
¹ This is expressed as a % of TPES, or Total Primary Energy Supply. In this case we have stripped out the use of traditional biomass.

Figure 1 Net fuel imports, expressed as a % of GDP (most recent year²)



Source: IMF, World Bank datasets, Kuungana Advisory analysis

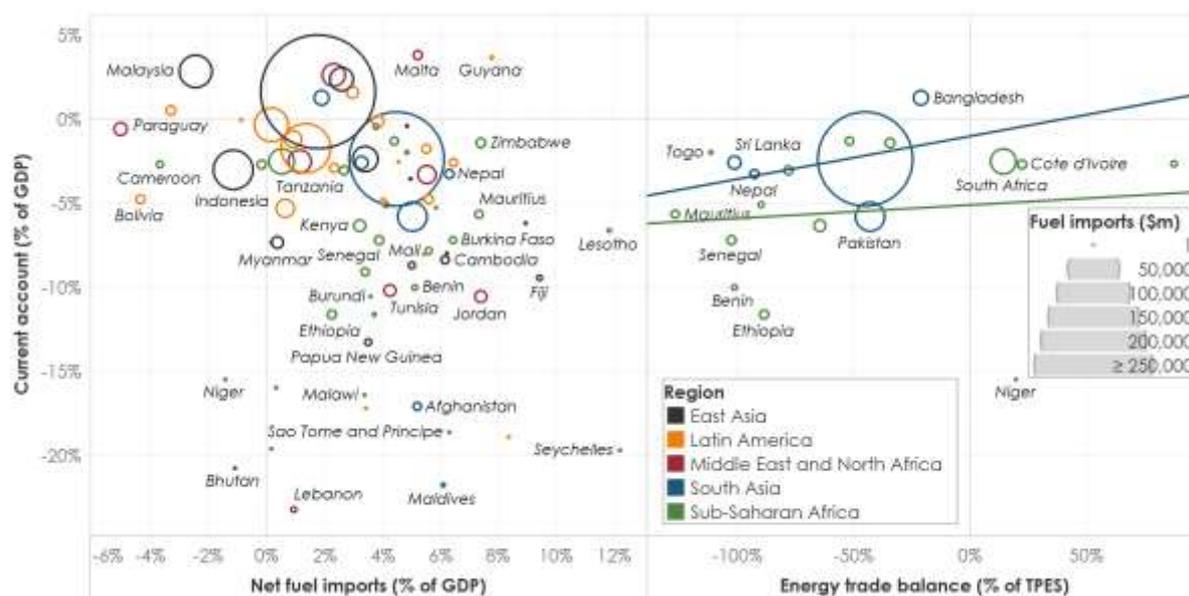
Figure 2 Countries (excluding high income countries) with net fuel imports exceeding 5% of GDP



Source: IMF, World Bank datasets, Kuungana Advisory analysis

² Data is shown for the most recent year in which data is available. For most countries this is either 2017 or 2018.

Figure 3 Impact of energy trade on countries' current accounts



Source: IMF, World Bank datasets, IEA energy balance data, Kuungana Advisory analysis

In both cases there are counterexamples to the overall trend, demonstrating that it is important to understand the specific context in a given country. For example:

- **Zimbabwe** has a surprising small current account deficit given its reliance on imported oil products, especially for the transport sector. In fact, Zimbabwe's current account deficit has declined significantly, from \$2.4bn in 2011 to \$0.3bn in 2017, which is likely to be largely a result of constraints on Zimbabwe's ability to borrow and trade. This is illustrated by a reduction in Zimbabwe's freight service imports from \$0.9bn to \$0.2bn over the same period.
- **Guyana** is an example of a country highly exposed to volatile commodity prices. Again the figure shows a surprisingly positive current account position for a country so reliant on fuel imports. The data shown for Guyana dates from 2016, when the price of sugar (Guyana's largest export) was very high. The price of sugar has since fallen by approximately half.
- **Niger** has a large current account deficit even as a net energy exporter. We understand that this is largely driven by the import of goods and services to support Niger's extractives sector. Note that without Niger, the trend line shown for SSA in the right-hand panel of Figure 3 would be parallel with that for South Asia.

By shifting from imported fossil fuels to indigenous renewable energy resources countries can improve their current account position. However, for many countries the impact could be limited:

- As shown by the example of Niger above, there are many other factors that drive a country's current account position.
- Renewable energy technologies are often capital intensive and both the generation equipment and many of the services required to implement a project will often be imported. This can contribute just as much to a current account deficit as fuel imports.³
- In reality the largest component of fuel imports is often the import of oil products and the largest component of demand for these fuels is normally transport. The use of renewable energy in the power generation sector is likely to have minimal impact on the current account for most countries. In the transport sector, the use of renewable fuels and/or electric vehicles remains low, even in more developed countries.

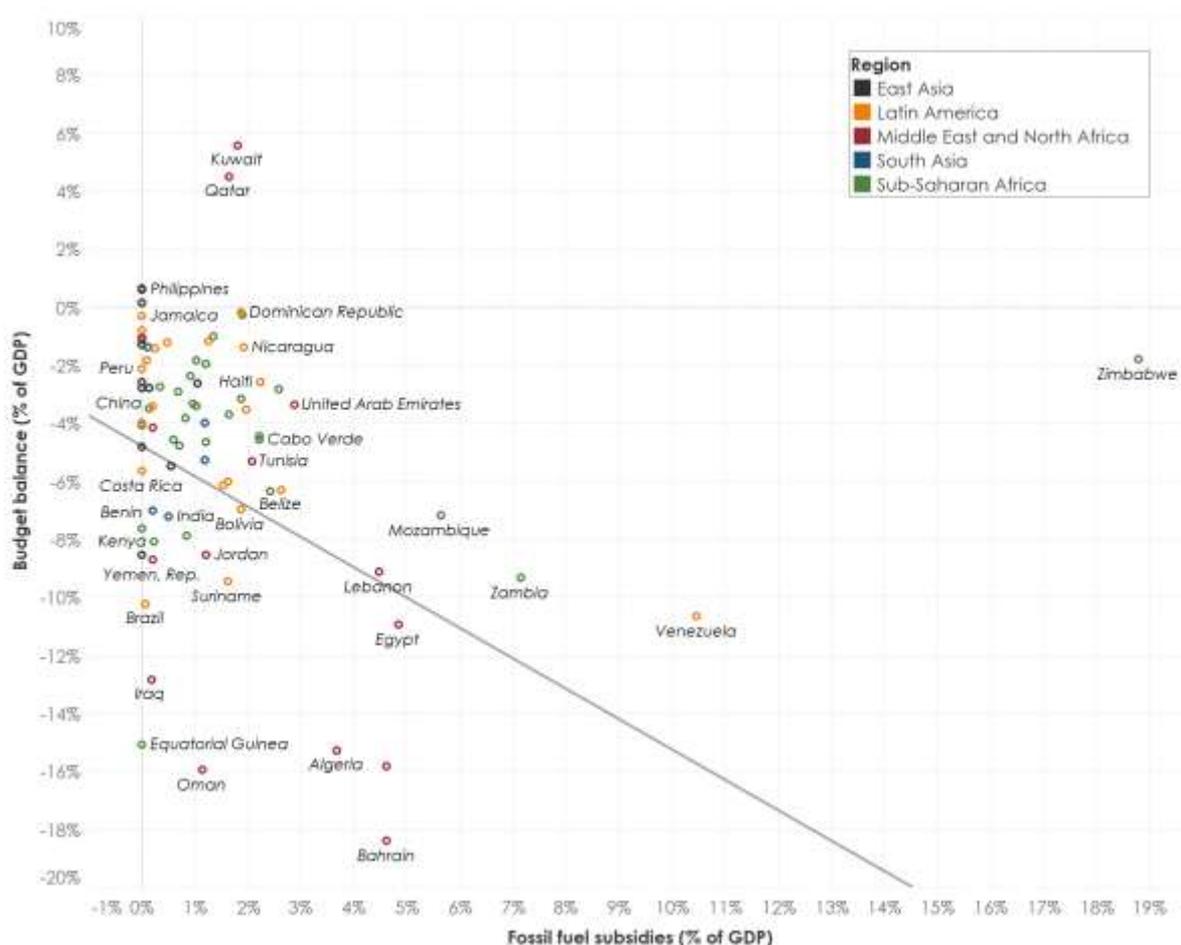
There are further budgetary reasons for transitioning away from fossil fuels. In many countries the government subsidises fossil fuels, whether through reducing tariffs for end-users, or through subsidising activities further up the value chain. These subsidies (as with any government spending)

³ However, it is worth noting an ancillary benefit that the contribution of capital expenditure to balance of payments is essentially locked in, whereas the impact of fuel imports is exposed to the volatility of international fuel prices.

have an impact on the government’s own budget and may result in higher government debt. This relationship can be seen clearly in Figure 4, which shows the link between countries with high fossil fuel subsidies and countries with a high primary budget deficit (i.e. the budget balance before debt service costs are considered).

Many of the countries above the trend line in Figure 4 could significantly improve their budget balance by reducing the resources committed to fossil fuel subsidies. Zimbabwe, Zambia, and Mozambique are examples of such countries. On the other hand, budget deficit in many of the countries below the trendline cannot be addressed solely through reduced fossil fuel subsidies. Many of these countries (Saudi Arabia, Algeria, Iraq, etc.) are oil producing countries; in these countries the cause of the budget deficit is often the result of government assuming a higher oil price in its budgeting compared to the actual outturn price.

Figure 4 Impact of fossil fuel⁴ subsidies⁵ on government finances



Source: IMF datasets, Kuungana Advisory analysis

A shift in the fuel mix, for example towards renewables, can again help to reduce the fiscal stress associated with fossil fuel subsidies; for example, if it is politically difficult to remove those subsidies. However, it is important to ensure that any proposed shift in fuel mix reflect the context in a given country and the composition of the subsidies in place. For example:

⁴ It is understood that the IMF fossil fuel subsidy data also includes subsidies to the electricity sub-sector.

⁵ For this analysis we have used the IMF’s “pre-tax” subsidies, i.e. before economic externalities are priced in.

- In countries like Zambia and Mozambique most of the subsidies shown in the figure are actually electricity subsidies. An increase in on-grid renewables would not reduce the fiscal burden of the subsidies in these countries.
- In Lebanon, the largest portion of subsidy is allocated to petroleum. A change in transport fuel mix would reduce the subsidy burden but is difficult to achieve. However, efficiency standards for new cars might be more realistic and could also reduce the cost of subsidies.

Cause and effect of the issue

The causes of an energy-related deterioration in the current account or government budget balance can be analysed further with reference to the Whole System Approach (WSA). The WSA provides a framework that describes the whole energy system as a series of components and sub-components. These can help with identifying the underlying issues that might contribute towards strain on the current account and/or government budget. The causes identified are summarised below in Table 1. The table indicates which WSA sub-components are relevant in each case.

Table 1 Factors that contribute towards a deterioration in current account and / or government budget balance

Cause	Description	WSA sub-components
Rapid growth in demand for energy	<ul style="list-style-type: none"> • Demand for energy can often increase rapidly in less developed countries to provide the inputs required to grow the economy. • This might, for example, be the result of a sustained push to improve rates of energy access, or it might be the result of implementing an industrial strategy. • An increase in motorcycle or car ownership could also be an important driver of demand for imported fuels. • Even where a country has substantial indigenous energy resources these resources often cannot be developed quickly enough to keep up with demand growth. • As such, countries often rely heavily on energy imports during these periods of rapid growth. This can contribute to a deterioration of the country's current account. • Further, if the country maintains an energy subsidy regime demand growth is likely to increase the absolute cost of the subsidy requirement, which in turn could worsen the government's budget balance. 	1.1. Demand-side participation 2.1. Energy access policy 2.4. Industrial strategy 2.9. Incentives and subsidies 4.10. Extraction of fossil fuels
Reliance on expensive liquid fuels	<ul style="list-style-type: none"> • Many less developed countries also rely disproportionately on expensive imported fuels, especially liquid oil-based fuels, such as diesel or HFO. • Countries often use these fuels because they are liquid both in the physical sense, meaning that they can be easily transported, and in the financial sense, meaning that they can easily be traded in international markets. • The underlying reason why countries rely on these fuels is that they can be sourced quickly (if expensively). Liquid fuels can often effectively fill the gap that exists as a result of poor or non-existent planning and / or procurement. • However, the cost of these fuels, combined with a lack of cost-reflective energy tariffs, can result in a deterioration of the government budget balance. • The fact that these fuels are typically imported can contribute to a deterioration in the country's current account position. 	2.7. Planning and forecasting 2.9. Incentives and subsidies 3.1. Procurement 4.7. Non-renewable energy
Lack of midstream value chain	<ul style="list-style-type: none"> • Even where a country does have indigenous energy resources it might not have activities through the full value chain. • The most obvious examples relate to oil resources: many countries that have oil reserves do not have midstream capabilities such as refining and/or fuel blending. • This means that countries end up exporting crude oil and reimporting processed oil products. In turn, this means that they are still reliant on imports to meet their total primary energy requirements, but they also miss out on economic value-add, which has a negative impact on the current account. • The lack of midstream capacity might be the result of poor planning or the lack of an integrated industrial strategy. For countries with substantial upstream resources this might represent a wasted economic opportunity. • In some countries, the lack of midstream resources might be because of a lack of economies of scale; for example, if the size of upstream resources would only justify a small, uneconomic refinery. 	2.4. Industrial strategy 2.7. Planning and forecasting 4.10. Extraction of fossil fuels 4.11. Fuel processing

Cause	Description	WSA sub-components
High energy subsidies	<ul style="list-style-type: none"> As shown in the analysis presented above, many less developed countries commit substantial government resources to energy subsidies. These subsidies are often justified as policy instruments for increasing energy access and/or improving the affordability of energy. Subsidies can keep the cost of energy artificially low, which in some cases might result in energy being used less efficiently than it otherwise would be. As demand increases this can result in a deterioration in the government's budget balance. Further, the price of the liquid fuels that are most widely traded (see above) can be highly volatile. The cost of subsidies to a government can therefore change rapidly. A subsidy that is affordable with a low oil price might rapidly result in fiscal stress if oil prices increase. 	2.1. Energy access policy 2.4. Role of regulation 2.9. Incentives and subsidies

The above table identified some of the WSA sub-components where support might be provided to mitigate the risks to a country's balance of payments and / or its government's budget balance that originate in the energy sector. If these causes are not tackled, they can ultimately lead to more acute economic consequences:

- Unsustainable government debt** – where subsidies are used in the energy sector and where energy tariffs for end consumers are not cost reflective, the cost of funding these subsidies will drain government financial resources. As noted above, the cost to government might also change rapidly; for example, if the price of oil increases. The sustainability of subsidies will obviously depend on many other factors, such as what other spending commitments the government has. However, subsidies will clearly worsen the government's budget balance and ultimately this can result in unsustainable levels of public borrowing. In the extreme, this in turn might result in a higher cost for public borrowing or could mean that the government is unable to borrow from international capital markets.
- Less resources available to fund public services** – even without government debt reaching such crisis levels, the use of public financial resources to fund energy subsidies will mean that those resources cannot be used to fund other resources. Less funds will be available to fund healthcare, education, and welfare, for example.
- Balance of payments crisis** – there is ultimately a limit to any country's ability to borrow. This is true both of the government's ability to fund energy subsidies and more broadly of the country's ability to fund the import of energy resources through its current account. A current account deficit is funded through the accumulation of debt, whether that be through the public sector or the private sector. If this becomes unsustainable then the economy will no longer be able to sustain itself as it will be starved of hard currency. In a crisis situation this can ultimately lead to a currency devaluation.

Mitigation strategies and long-term solutions

Building on the analysis of the causes of budgetary pressure that are analysed above, Table 2 presents some of the intervention options to consider in addressing these issues. This table again signposts to the relevant sub-components of the WSA, where further guidance can be found.

Table 2 Intervention options for addressing budgetary pressure that originated in the energy sector

Intervention option	Description	WSA sub-components
Improve energy efficiency and implement higher fuel efficiency standards	<ul style="list-style-type: none"> • Where a country is highly dependent on energy imports, one obvious way to reduce that dependence is through using less energy. • If energy can be used more efficiently this can also help to improve economic productivity. • The analysis presented above noted that the use of oil products for transport is often the largest driver of fuel imports, so improved fuel efficiency standards for new / imported vehicles could help reduce imports. • Analysis can be performed to identify the biggest opportunities for increasing energy efficiency, and the impact of those efficiency improvements on the current account. For example, significant efficiency improvements might be possible through improved cooking solutions, but this will have little/no impact on the country's current account. • Support can then be provided in designing and implementing the proposed energy efficiency measures. 	<p>1.1. Demand-side participation</p> <p>2.2. Emissions reduction policy</p> <p>2.3. Energy efficiency policy</p>
Development of midstream infrastructure	<ul style="list-style-type: none"> • If a country has substantial upstream energy resources, but no midstream infrastructure there may be a benefit in helping the country to develop this infrastructure. • The country may be exporting crude oil and then importing refined oil products, for example. • This could be both a missed opportunity for industrial development, but also a contributing factor to a poor current account situation. • Support could be provided to identify the gaps in midstream infrastructure and to evaluate the business case for this additional infrastructure. • Business case evaluation should consider the relative tenors of upstream and midstream investments. For example, midstream investments might not make sense if upstream resources are expected to be exhausted in a small number of years. • The business case analysis should also consider economic externalities such as emissions of greenhouse gases. • This analysis needs to carefully consider the specific context of a given country; for example, taking into account the demand for different fuels both domestically and in neighbouring markets. • Consideration should also be given to the distribution channels available to deliver fuel to its final destination. 	<p>1.1. Demand-side participation</p> <p>2.2. Emissions reduction policy</p> <p>2.4. Industrial strategy</p> <p>3.1. Procurement</p> <p>4.4. Liquid and solid fuel distribution</p> <p>4.10. Extraction of fossil fuels</p> <p>4.11. Fuel processing</p>
Fuel reserves for security of supply	<ul style="list-style-type: none"> • If a country is heavily dependent on imported fuels there could be an increased risk to security of supply. • In many developed countries this risk is addressed through the maintenance of strategic fuel reserve and the definition of minimum fuel reserves that should be maintained so that supplies remain available in the event of an interruption to imports. • Support could be provided to ministries and/or regulators to evaluate the need for such regulations and to help design and implement them. 	<p>2.5. Role of regulation</p> <p>3.2. Market arrangements</p> <p>3.3. System operation</p> <p>4.4. Liquid and solid fuel distribution</p>
Improved planning with least regrets considerations	<ul style="list-style-type: none"> • Improved planning and scenario modelling could often help to mitigate the risk of acute budgetary pressure. • For example, improved demand modelling and procurement of power generation capacity should reduce the risk of needing to contract expensive emergency power plants that rely on imported liquid fuels. • Scenario planning could also consider a real options approach that can result in a more resilient energy sector plan. 	<p>1.1. Demand-side participation</p> <p>2.7. Planning and forecasting</p> <p>3.1. Procurement</p>

Intervention option	Description	WSA sub-components
Targeted reduced use of distributed generators	<ul style="list-style-type: none"> • In many countries the use of distributed diesel generators is both a significant driver of imports of oil products and a major source of carbon emissions. • Interventions to reduce the use of these generators could help to both improve a country's balance of payments and to reduce fiscal pressure resulting from fossil fuel subsidies. • This could be achieved through interventions to increase security of supply and reliability, for example through targeted investments in network infrastructure, meaning that businesses can rely more on grid electricity. • Distributed renewable energy and/or battery storage technologies could also help to displace the use of diesel generators. 	<ul style="list-style-type: none"> 1.1. Demand-side participation 2.2. Emissions reduction policy 2.4. Industrial strategy 2.9. Incentives and subsidies 4.5. Network infrastructure
Encourage the use of low carbon technologies, including renewables	<ul style="list-style-type: none"> • Fossil fuels tend to be the main driver of both energy-related trade deficits and energy subsidies. • A transition towards lower carbon technologies can therefore help to reduce budgetary pressures as well as meeting other policy objectives such as reduced emissions. • This might include energy efficiency measures, as already suggested above, but could also involve a shift towards renewable energy technologies. • If energy sector planning properly considers the impact of the energy sector on government finances and trade balances it should identify cases where there would be benefits to a shift towards alternative technologies. 	<ul style="list-style-type: none"> 2.2. Emissions reduction policy 2.3. Energy efficiency policy 2.7. Planning and forecasting 2.9. Incentives and subsidies 4.8. Renewable energy
Careful use of local content requirements	<ul style="list-style-type: none"> • As noted earlier, the use of renewable energy itself does not guarantee an improvement to a country's current account, even where the fossil fuels being displaced are imported, because the renewables equipment is often itself imported. • Local content requirements can improve this situation as well as helping to develop a local supply chain. • However, poorly designed or over-ambitious local content requirements can hinder the transition to low carbon technologies and/or increase the cost to end consumers. • It can also be more difficult to require local content in small markets compared to larger markets like South Africa where, for example, local content provisions have been used successfully in renewable energy procurements. 	<ul style="list-style-type: none"> 2.2. Emissions reduction policy 2.6. Regulatory incentives 2.9. Incentives and subsidies 3.1. Procurement 4.8. Renewable energy
Subsidy reform and cost reflective tariffs	<ul style="list-style-type: none"> • Energy subsidies are often introduced to support energy access objectives and to make energy more affordable. For example, kerosene might be subsidised, or electricity tariffs might be set at below cost for households. • While these policies might be well intentioned, there are often several negative consequences: <ul style="list-style-type: none"> ○ The subsidies have a negative impact on the government's budget, reducing resources available to provide other services. ○ By making energy 'cheap' the subsidies could encourage inefficient energy use, artificially increasing demand for energy, driving a deterioration of the current account. ○ Subsidies for kerosene could inadvertently encourage higher carbon emissions. ○ Unless the subsidies are carefully targeted, they may disproportionately benefit the middle classes who use more energy than the poor. • Well-targeted subsidies can still help to achieve policy objectives (such as improved access to energy), but rigorous economic analysis should be performed to evaluate the business case for such subsidies. 	<ul style="list-style-type: none"> 1.1. Demand-side participation 2.1. Energy access policy 2.2. Emissions reduction policy 2.3. Energy efficiency policy 2.5. Role of regulation 2.8. Market design 2.9. Incentives and subsidies

Concluding remarks

There are many reasons why a reduced reliance on imported fossil fuels might have budgetary benefits, in addition to the clear benefits for reduction of carbon emissions. Net import of these fuels can sometime be a significant driver of current account deficits, and in less developed countries the use of these fuels is often subsidised, which increases pressure on government budgets.

However, as highlighted in this discussion paper, it is important to consider the specific context in a given country before determining what interventions to support. There is no 'one size fits all' and the WSA can be used to help identify which interventions are most appropriate to a specific environment. It is, for example, misleading to consider only the balance of payments impact associated with fuels, when alternative technologies might have a much higher requirement for (also imported) capital expenditure.

That said, there are many opportunities for reducing budgetary pressures that originate in the energy sector, both through a transition to cleaner energy technologies and through reform of energy subsidies.