

# World Trade Report 2010

Trade in natural resources



What is the World Trade Report?

The World Trade Report is an annual publication that aims to deepen understanding about trends in trade, trade policy issues and the multilateral trading system.

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Using this report

The 2010 World Trade Report is split into two main parts. The first is a brief summary of the trade situation in 2009-2010. The second part focuses on the special theme of natural resources.

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## Disclaimer

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## Foreword by the WTO Director-General



The 2010 *World Trade Report* examines trade in natural resources. This is a topic of growing importance in international trade relations. Natural resources are at the root of much economic activity, they are a key component of many economies, and their share in world trade is growing. A number of features exclusive to natural resources explain why they occupy a special place in economic, political economy and policy analysis.

Natural resources tend to be concentrated in relatively few locations around the world. This makes for profitable trading opportunities among nations. At the same time, because natural resources are so crucial to many economic activities, adequate access to them is regarded as a vital national interest everywhere. Those who possess natural resources may not always wish to trade them, but rather to harness them domestically as a basis for economic development and diversification. When the underlying conditions of supply or demand for natural resources change – which has been the case in recent years for many resource products and is likely to continue to be so – competing national interests can become a source of political tension.

Another important feature of natural resources is that they are either finite in nature – like fossil fuels – or exhaustible. If they are renewable but exhaustible – like fish and forests – they can effectively be rendered finite by over-exploitation. In the case of both finite and renewable resources, current policies are inextricably linked with the prospects of future generations. The rate at which natural resources are extracted or exploited is crucial. This reality adds to the complexity of policy analysis and strengthens the need for international cooperation.

The production and consumption of natural resources also frequently create situations in which market prices do not reflect the full costs or benefits of economic activity. This generates what economists refer to as an externality, a market failure that can only be addressed by policy intervention. Such intervention could in some cases also entail institutional innovation. A feature of some natural resources is open access, which means that property rights are ill-defined. One person's harvest of such a resource affects the harvesting prospects of everyone else, and it is not difficult to see how a resource can be exhausted by the pursuit of individual self-interest in the face of a deficient market and a lack of regulation. This is a classic externality. Most externalities associated with natural resources tend to be negative, such as the

environmental damage caused by burning fossil fuels. These effects often occur across borders, and cannot be addressed effectively without joint action among nations.

Natural resources sometimes dominate entire economies, posing particular policy challenges. This is more likely to be the case for smaller developing countries. The kinds of policies that the government of a nation in these conditions pursues make the difference between suffering from a so-called resource curse and building successfully for development.

We have seen over the years how natural resource prices can be much more volatile than the prices of other goods. Volatility carries economic costs because it generates uncertainty. It makes planning difficult and means that incomes fluctuate, hurting individuals, enterprises and countries. Some things can be done to counteract price volatility and there are also ways that affected parties can insulate themselves from the effects of volatility. But uncooperative government responses to price hikes often exacerbate rather than reduce volatility.

The characteristics of natural resource markets can make standard trade policy prescriptions problematic. While it is clearly true that trade in natural resource products can often yield benefits to all concerned, blind reliance on standard prescriptions for greater trade openness can be hazardous. Where markets fail and nothing is done to rectify the failures, more trade can strengthen the adverse effects of poorly functioning markets. Increased trade in an open access situation can exacerbate the problem of over-exploitation. Habitats can be destroyed if resource management is poor and trade accelerates changes in land use. Countries in which natural resources dominate the economy run greater risks of suffering from the resource curse if trade merely intensifies resource dependency.

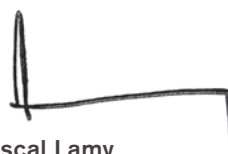
Most of these arguments are not about the desirability of trade. Rather, they are about the need to ensure that trade is accompanied by domestic policies and global rules that address the particularities of natural resource markets. Moreover, opening to trade can have specific beneficial effects in natural resource markets. Trade can support technological developments that improve resource management. It can provide opportunities for resource-dependent economies to diversify and develop new industries. By joining up markets, trade can provide a bulwark against volatility.

If the relationship between trade and natural resources is by nature complicated, it is hardly surprising that these complexities spill over into trade policy. The report devotes considerable space to an economic analysis of different policies affecting trade, how these policies relate to each other and affect economic welfare. While the use of tariffs is less prevalent in natural resource sectors than in other goods markets, domestic policies affecting production and consumption can have effects very similar to trade policies where a natural resource is predominantly exported or imported. Policies affecting exports are more common in natural resource sectors than elsewhere. Subsidies are also quite common.

Among the range of policies affecting natural resources trade, subsidies and export policies appear to be the most challenging. Subsidies can be useful instruments for addressing market failures and changing incentive structures in ways that favour superior outcomes. But they can also make matters worse. Everything depends on what subsidies governments are deploying, and whether they are responding to public welfare concerns or pressures from narrow interest groups. Governments may use export taxes and restrictions for a variety of reasons, including economic diversification and domestic price stabilization, to counter escalating tariffs in importing countries and to manage environmental externalities. But at the same time, export taxes and restrictions may also raise world prices and shift economic "rents" arising from scarcity. Beggar-thy-neighbour policies of this nature reduce economic welfare, increase trade tensions and can provoke retaliation.

As discussed in the report, the GATT/WTO rules were not written with natural resource markets as the primary focus. Many of the rules impinge on natural resources trade but some of them are open to competing interpretations as well as disputes from time to time, and they do not cover all aspects of the policy realities surrounding natural resources trade. Moreover, many other inter-governmental agreements besides the WTO contain rules relevant to natural resources trade, and this mixture is not always entirely coherent.

The report attempts to clarify, elucidate and contribute to a debate which in effect is already taking place in various guises, including through negotiating proposals in the Doha Round. I believe not only that there is room for mutually beneficial negotiating trade-offs that encompass natural resources trade, but also that a failure to address these issues could be a recipe for growing tension in international trade relations. Well-designed trade rules are key to ensuring that trade is advantageous, but they are also necessary for the attainment of objectives such as environmental protection and the proper management of natural resources in a domestic setting. My final point, which will come as a surprise to no-one, is that we would greatly enhance our chances of positive action in this area if we were to come to a prompt closure of the Doha Round.



**Pascal Lamy**  
Director-General

# Executive summary

## Section A: Introduction

**Natural resources represent a significant and growing share of world trade, and properly managed, can provide a variety of products that contribute greatly to the quality of human life. They also present particular challenges for policy makers.**

The extraction and use of natural resources must balance the competing needs of current and future generations. The manner in which they are managed has important environmental and sustainability implications. The unequal distribution of natural resources across countries and frequent volatility in their prices are potential sources of international tension. Moreover, as world output growth resumes following the financial crisis and global recession, natural resource prices will almost certainly rise again.

A number of characteristics peculiar to natural resources influence the manner in which they are traded and the nature of the rules applied to this trade. Differing international and inter-generational interests inherent in natural resources trade make transparent, predictable, well-designed and equitable trade rules particularly valuable. Inadequate or contested rules risk stoking the fires of natural resource nationalism, where differences in power across countries and beggar-thy-neighbour motivations dominate trade policy. In a world where scarce natural resource endowments must be nurtured and managed with care, uncooperative trade policies could have a particularly damaging effect on global welfare.

The report examines these issues with particular reference to resources that are traded between countries, such as fish, forestry, fuels and mining products. Agricultural products are not included in the analysis as they are cultivated rather than extracted from the natural environment. Other non-traded resources are only briefly discussed. For instance, the report considers water, not as a traded product in itself, but rather in terms of the water content of other commodities. Natural resources such as air or biodiversity are only examined to the extent that they are affected by trade.

See page 40.

## Section B: Natural resources: Definitions, trade patterns and globalization

### Definitions and key features of natural resources

**Natural resources are “stocks of materials that exist in the natural environment that are both scarce and economically useful in production or consumption, either in their raw state or after a minimal amount of processing”. Most natural resources share a number of important characteristics, including uneven distribution across countries, exhaustibility, externalities (market failures in the form of unpriced effects resulting from consumption and/or production), dominance in output and trade, and price volatility.**

#### Uneven distribution

Supplies of some of the world's most vital natural resources are controlled by a small number of countries, which may be able to exercise power over markets as a result. Trade frictions may follow, although trade has the potential to improve efficiency and increase welfare by shifting resources from regions of relative abundance to regions of relative scarcity.

#### Exhaustibility

Resources are either non-renewable (e.g. fossil fuels and metallic ores) or renewable (e.g. fish, forests and water) but even renewable resources can be exhausted if they are mismanaged. This is what makes resource management so important. In some instances, trade may contribute to the exhaustion of resources by accelerating their depletion.

#### Externalities

The production, trade and consumption of natural resources can have negative impacts on people not involved in the markets in which the relevant economic decisions are made. Trade may exacerbate or ameliorate these externalities either by increasing the rate of consumption or by promoting more efficient use of resources.

#### Dominance in national economies

Resource extraction industries are sometimes responsible for an outsized share of a country's trade and/or GDP. This is especially true for fuels, and to a lesser extent for ores and other minerals. Exports from resource-rich countries tend to be highly concentrated in few products and trade can encourage over-specialization in resource extraction. Trade can also facilitate diversification by providing access to foreign markets.

## Volatility

Certain natural resources, particularly fuels and mining products, can be subject to extreme price volatility. This is a source of uncertainty that adversely affects investment and production decisions. Trade can contribute to a reduction of volatility by ensuring access to diverse resource supplies.

## Natural resource trade flows and related indicators

**The share of natural resources in world trade has risen sharply in recent years, partly reversing the trend since World War II towards increasing trade in manufactured goods, but the picture varies by region.**

The recent rise is mostly due to rising commodity prices, particularly for oil. Fuels account for more than three-quarters of natural resources trade.

Africa, the Middle East and the Commonwealth of Independent States (CIS) all had resource shares in total exports in excess of 70 per cent in 2008, while North America, Europe and Asia all had resource shares of 20 per cent or less. South and Central America was in between, at 47 per cent.

**Less industrialized regions have very little intra-regional trade in natural resources, whereas more industrialized regions tend to trade resources within their own regions.**

Shares of intra-regional trade in natural resource exports of the more industrialized WTO regions in 2008 were as follows: 82 per cent for Europe, 78 per cent for Asia and 62 per cent for North America. Meanwhile, resource-dominant regions of the CIS, Africa and Middle East had very low intra-regional trade shares of 12 per cent, 5 per cent and 2 per cent, respectively. Latin America was again between the extremes with an intra-regional trade share of 22 per cent.

## Modes of natural resources trade

**Natural resources trade differs from trade in manufactured goods in some notable respects. Being more or less homogeneous in nature, natural resources are amenable to centralized trading that facilitates exchange transactions and entails the formation of a unified price.**

The emergence of organized exchanges has greatly reduced transaction costs for trade in natural resources. Although a large share of commodity trading still occurs in the developed world, some developing-country exchanges have become market leaders for certain commodity contracts.

Centralized exchanges facilitate “price discovery” – or the determination of market prices – and, by encouraging competition, these exchanges tend to lower prices to

consumers. Commodity exchanges also increase liquidity and allow disruptions in supply from one producer to be compensated by alternative supplies from elsewhere. They also allow for hedging against unfavourable price movements and act as financial intermediaries as well as clearing houses, thus managing the risk associated with exchange transactions and ensuring the integrity of the marketplace.

**Specific modes of trade, such as long-term intergovernmental contracts and vertical integration, have also developed in response to particular characteristics of natural resources, notably their unequal geographical distribution.**

Until the early 1970s, trade in a range of commodities was conducted primarily through long-term contracts between producer and consumer countries, mostly via state or multinational companies. These arrangements responded to a number of factors, including strategic considerations, non-competitive production structures, high sunk-cost investments and security of supply. Over time, these bilateral long-term supply contracts have been complemented and even replaced by trading on organized exchanges. However, bilateral supply contracts between governments of resource-abundant countries and private investors or firms from abroad still exist.

For many energy and mining commodities, rather than arm's-length contracts, the vertical integration of various stages of the production process within one company is often the preferred mode of trade in increasingly important global production chains. This may be attributable to fluctuations in profits at different stages of the supply chain, uncertainty in access to resources, high sunk costs associated with location or site-specific investments, and consumer demands for quality and safety.

## Natural resources: Globalization and the intellectual debate

**The globalization of natural resources trade has been driven by a number of factors, including population growth, spreading industrialization, and the rise of developing economies. However, two trends are particularly significant – the revolution in transport technology since the mid-19th century and the gradual opening of commodity markets since the 1980s.**

Technological advances in transport and information technology have dramatically changed the economics of moving low-value goods cheaply across great distances. Natural resource transport costs fell over 90 per cent between 1870 and 2000. This, in turn, has greatly expanded the volume of raw materials traded, the distances covered, and the commodities involved.

The period after the 1980s saw a steady (though not universal) shift towards an opening of global commodity markets. Tariff barriers have gradually been reduced in successive rounds of multilateral trade negotiations.



**A wide-ranging intellectual debate continues about the impact of economic growth on the earth's limited natural resources.**

Some have argued that continued economic and/or population growth will inevitably lead to the exhaustion of natural resources and the degradation of the environment.

Others believe that economic growth and technological progress can help to manage scarce resources and to develop alternatives.

One point of disagreement is whether markets, as presently structured, are equipped to deal with these pressures. Concerns about the viability of markets relate to spillovers or externalities that need to be managed by government policy. Climate change and other signs of environmental degradation have been pointed to as evidence of the limitations of existing markets in addressing resource depletion and environmental costs.

**Views have differed over the years as to whether natural resources are a “blessing” or a “curse” for economic development. Many economists have seen natural resource endowments as key to countries’ comparative advantage and critical to economic growth, while others have argued that dependency on natural resource exports can trap countries in a state of under-development.**

While signs of declining prices and growing resource abundance were a cause for optimism among some economists, others drew a link between falling commodity prices on world markets and declining terms of trade (falling export prices relative to import prices) for developing countries, leading to stagnant incomes and arrested development.

In order to break free, developing countries were urged to diversify their economies and develop their manufacturing industry – including through the use of selective protection and import substitution. Excessive reliance on import substitution in some countries gave way to an emphasis on export-led growth, and also to the belief that open markets were the surest guarantor of growth and development.

The debate has matured in recent years, recognizing the multi-faceted and inherent complexity of the development process. This perspective acknowledges both the advantages of market openness and the responsibility of governments in fostering development.

See page 44.

## Section C: Trade theory and natural resources

### Trade and resource distribution

**Uneven geographical distribution of resource endowments across countries plays an important part in explaining the gains from natural resources trade.**

In standard trade models built on the theory of comparative advantage, endowments of immobile and scarce natural resources may constitute a source of gains from trade. Trade fosters a more efficient allocation of resources, leading to an increase in global social welfare. These “static” effects need to be evaluated against the dynamic effects that trade has on the exhaustibility of natural resources.

Recent empirical literature finds support for traditional theory. However, it also suggests that only when other determinants of comparative advantage – such as infrastructure, schooling and institutional quality – are in place does the resource-abundant country reap the full benefits of exchanging its resources with countries that have relatively high endowments of capital and skilled labour, and import capital-intensive goods in return.

### Trade theory and resource exhaustibility: The challenge of finite supplies

**Trade in finite resources has both “static” and “dynamic” effects on social welfare. While traditional theories predict that the static effects are positive, the dynamic implications of trade are more difficult to study.**

A key feature of finite resources is that current use alters consumption possibilities of future generations. This poses a problem for the efficient management of natural resources over time.

Several studies have concluded that in a world of finite resources, the predictions of the traditional theory are generally preserved under the assumption that there are no market and government failures. While this is a useful theoretical finding, it is important to bear in mind that failures such as imperfect competition, environmental effects unpriced in markets (externalities) and poor governance are pervasive in natural resource sectors.

**Imperfections in some natural resource markets raise questions about the efficiency of extraction and optimal extraction rates. Imperfect competition may affect trade patterns, although the impact of trade on resource management in these circumstances remains largely unexplored in the economic literature.**

Natural resource markets are often characterized by high concentration and monopoly power. On the supply side, uneven geographical distribution of natural resources, scarcity and high fixed costs of extraction limit market participation and favour the creation of cartels. On the demand side, high fixed costs of refining natural resources and high transport costs favour concentration of processing in few locations.

A finding of economic theory is that imperfectly competitive markets will lead to slower resource depletion than in the case of perfect markets. As far as trade is concerned, the notion that imperfect competition will deliver a more conservative extraction path than perfect competition continues to hold in a situation where all resources are controlled by a cartel and exported to the rest of the world. More generally, economists are less certain about the impact of trade on resource depletion under imperfect competition. This is because modelling imperfect competition in natural resource markets introduces analytical complexities, due to the fact that strategic interactions among agents have to be considered in an inter-temporal framework, making welfare analysis more difficult and results harder to generalise.

Trade patterns are likely to depart from comparative advantage if extraction is controlled by an international cartel. Imperfect competition *per se* may also be a determinant of trade. Monopolists in two markets may differentiate between domestic and foreign markets in terms of prices, thus generating two-way trade in the same type of goods – a phenomenon referred to as reciprocal dumping.

**Technical change and capital accumulation can partially offset the exhaustibility of non-renewable resources. Trade can contribute to this process.**

Current use of non-renewable natural resources will, by definition, reduce future consumption possibilities. However, economists point out that this simple fact does not necessarily imply that current growth rates cannot be sustained in the future.

The substitution of man-made factors of production (capital) for natural resources can offset the limitations imposed by natural resources. To the extent that it promotes the diffusion of technologies that offset the exhaustion of natural resources, international trade can help to support sustained growth.

### **Trade theory and resource exhaustibility: The problem of open access**

**Open access may reverse some of the predictions of standard trade theory.**

Weakness in property rights means access to a natural resource, such as a lake stocked with fish cannot be controlled. The entry of too many fishermen, results in over-exploitation of the natural resource. Each fisherman reduces the productivity of all other fishermen. However, the individual fisherman does not

take into account the negative effect of his entry on the productivity of other fishermen. In the end the result is too much effort expended to catch too few fish.

In standard trade theory, countries with identical tastes, endowments and technologies do not have any reason to trade. However, if a natural resource sector is characterized by open access, differences in the strength of each country's property rights regime can create the basis for trade despite countries being identical in all other respects. This means that the property rights regime can serve as a *de facto* basis of comparative advantage, which can also alter the pattern of trade. For instance, it is possible for the resource-scarce country to end up exporting the good to a more resource-abundant country if the former's property rights regime is sufficiently weak.

**Open access may also undermine the gains from trade.**

While the welfare of the resource-importing country rises with trade, it declines for the resource-exporting country. This is because free trade exacerbates the exploitation of the natural resource so that the stock is lower than in autarky. Since the size of the natural resource stock affects labour productivity, the lower stock means that the economy will be harvesting a smaller quantity of the natural resource under more open trade.

**Trade pessimism may be overstated if demand for an open-access natural resource is high or if trade strengthens the property rights regime.**

If the demand for a particular natural resource is high, a country with weak property rights can end up importing rather than exporting the natural resource. The combination of high demand for the resource and poorly defined property rights leads to rapid depletion of the stock even if the country does not trade at all.

The strength of the property rights regime depends on a variety of factors, including the ability of a government to monitor supplies and catch cheating, the nature of technologies for harvesting and for regulating, and the economic benefits from poaching the resource. An increase in the price of the natural resource brought about by trade affects each of these factors in different ways. It may lead to increased monitoring effort or higher penalties for poaching, both of which would strengthen the property rights regime. The possible effects of trade-induced technological change are ambiguous, depending on the nature of the change.

### **Environmental externalities and trade**

**The extraction and use of exhaustible resources in production and consumption activities can have negative effects on the environment.**

Adverse environmental effects of resource extraction and use, such as carbon dioxide emissions, acidification of the sea or deforestation, may not be taken into

account by the market. The resulting negative externality leads to resource extraction in excess of the socially optimum rate.

**In the case of polluting resources that are finite, such as fossil fuels, a general conclusion of the theoretical literature is that postponing resource extraction is optimal for the environment. The impact of trade on pollution externalities resulting from finite resource extraction is ambiguous.**

Prices of non-renewable resources may be expected to rise over time as stocks are depleted. This will implicitly take care of part of the environmental damage generated by the extraction of such resources. In addition, the market may react to the increase in prices by developing alternative energy technologies to deal with the climate change problem. Where monopolistic power exists in the extraction industry, the resource will be extracted at a slower rate than it would be under more competitive market conditions.

In the presence of market failures such as different levels of information among actors in the market about the total amount of available resources and poorly defined property rights, trade may accelerate resource consumption beyond the social optimum and exacerbate the environmental externalities associated with the extraction and use of finite resources. By contrast, the impact of technological innovation induced by trade on environmental damage will be negative or positive depending on whether the technology reduces the costs of extraction or the emissions generated by the extraction and consumption activity. For resources such as coal, oil and natural gas, trade might help to mitigate some of the environmental externalities deriving from their use by facilitating substitution from more to less polluting energy sources.

**The preservation of biodiversity is an important concern in the context of renewable resource use. In certain contexts opening to trade can have an adverse impact on biodiversity via the destruction of natural habitat. The effect of trade on species in the context of an open access problem depends on the biological relationship between species.**

Habitat destruction, in forestland or grassland, for example, is a direct result of the expansion of economic activities, such as timber or grain production respectively. The welfare gains from trade would need to be discounted by this consideration to the extent that trade has contributed to such an outcome. If the species of each country are specific to that country, trade specialization will have a negative impact on global biodiversity. If, however, the same species live in all countries prior to opening up to trade, it is still possible that trade allows for an overall increase in biodiversity.

The impact of trade on various species of plants and animals depends on whether their relationship to other species is symbiotic – or positive. For example, in a world without trade where two species of fish are harvested, the problem of common access to a natural

resource will be mitigated if the relationship between the species is positive (that is, if the stocks of the two species are mutually beneficial). The problem will be worsened if the relationship is negative. With trade between two countries, leading to specialization in the harvesting of one species, the result will be under-harvesting (or over-harvesting) if the relationship between the species is negative (or positive). As the number of countries exploiting and trading each species rises, whether there is over- or under-harvesting will not only depend on the type of biological externality across species. It will also be determined by a series of factors such as the total number of countries trading, the price effects and consumer preferences among countries.

## The natural resource curse

**The dominance of a natural resource in an economy may harm economic performance. This phenomenon is often referred to as the resource curse hypothesis. Transmission channels for the resource curse include the “Dutch disease”, adverse effects on other determinants of growth, and civil conflict.**

The Dutch disease occurs when an increase in revenues from natural resources de-industrializes a nation's economy by raising the real exchange rate, making the manufacturing sector less competitive. This type of de-industrialization can be direct or indirect. It is direct when production shifts from manufacturing to the natural resources sector, and indirect when additional spending caused by the increase in natural resource revenues results in a further appreciation of the real exchange rate. If the manufacturing sector has benefited from positive externalities through learning by doing or other factors, the contraction in manufacturing output induced by the Dutch disease is likely to reduce the growth rate of the economy, with permanent effects on income levels.

Resource dominance may have an indirect effect on economic growth through the institutional framework. It can either hamper growth in the presence of weak institutions, such as badly defined property rights, poorly functioning legal systems, and weak rule of law, or it can itself contribute to institutional worsening.

Primary commodities can help emerging rebel groups to fund their operations, so natural resources increase the probability of civil wars. In addition, resource extraction can create grievances among the local population on account of such factors as insufficiently compensated land expropriation or environmental degradation. Countries marked by an uneven distribution of natural resources within their territory and ethnic divisions are particularly prone to civil conflict. Evidence shows that “point-source” natural resources – that is, resources such as oil and minerals that naturally occur in dense concentrations – are more likely to engender the onset of civil conflict. The amount of commodities that can be looted and smuggled, like gemstones, tends to be correlated with the duration of civil conflict.

### **Trade may intensify or dilute natural resource dominance in an economy.**

All else being equal, opening up to trade will increase the price of a natural resource and engender greater resource dominance. However, trade may also offer opportunities for diversification of the production base and therefore reduce dominance. The latter effect will depend largely on whether governments pursue relevant supporting policies for diversification.

### **Empirical literature on the natural resource curse has so far failed to reach unified conclusions.**

Earlier literature identified a negative relation between growth and resource dependency, even after taking into account a large number of other possible determinants of slow growth, such as terms of trade changes, investment activity and institutional quality. Subsequent work pointed to institutional quality as a crucial determinant of whether natural resource abundance is a curse or a blessing, arguing that resource abundance indirectly affects economic growth through its adverse impact on institutions.

More recent empirical contributions have criticized the finding that natural resource abundance is a curse, arguing that natural resource dominance can have zero or even positive effects on growth if abundance is correctly measured, additional variables that correlate with resource abundance are taken into account, and depletion of the resource over the sample period is factored into the assessment.

## **Natural resources and price volatility**

**Historically, natural resources have been characterized by periods of high price volatility. In the most recent commodity boom and bust – one of the largest and most long-lasting in history, covering a broad range of commodities – the dramatic acceleration of price increases from 2006 onwards for certain commodities created the suspicion that prices were influenced by speculative activity.**

The possible role of non-traditional investors, such as index funds, hedge funds and others not connected to the commodity business, in bringing about price volatility has been a matter of concern. The increasing market share of financial traders in the oil futures market between 2004 and 2008 (from 33 to 50 per cent), for instance, and the declining participation of traditional traders, such as oil producers, refiners and wholesalers (down to 15 per cent from 31 per cent), is seen by some as being indicative of “herding” effects that may have resulted in a speculative bubble.

However, it is doubtful that “speculators” have played a major role in explaining recent commodity price volatility. Speculative trading may raise prices in spot markets, where physical delivery of a product is immediately arranged, only if it induces participants to hold

commodities outside the market and build up inventories. Inventory data on a range of commodities over the time period in question suggest that stocks have stayed flat or even declined, thus defying any notion of possible “hoarding”.

Some evidence suggests that commodity investment by non-traditional traders has delayed or moderated price volatility, rather than initiating or adding to it. High price volatility has been present in certain commodity markets with little participation of non-traditional investors. As in previous cycles, it appears that a particular mix of fundamental economic factors is responsible for the observed large swings in commodity prices.

### **Market forces that appear to have contributed to price volatility include buoyant economic growth in emerging economies, limits to production capacity in the short run and the relative prices of resource substitutes.**

Relative to the 1980s and 1990s, the period from 2002 to 2007 saw large annual increases in the global consumption of major commodities, in particular due to rapid economic growth, industrialization and urbanization in several emerging economies. In mid-2008, however, this trend changed with a contraction of world demand during the recession.

In the short run, there are limits to increasing supply capacity. Capacity constraints became apparent during the commodity price boom as a result of limited investments during the 1980s and 1990s, when prices were low. On the other hand, high commodity prices prior to the recent economic downturn are likely to have stimulated investment in production capacity, thereby alleviating supply-side constraints in the future.

Linkages across different commodity markets have also played a role in recent price fluctuations. For instance, higher oil prices affected other commodity prices, as in the case of substitution from oil to coal for power generation.

### **Volatility in the price of natural resources has long been considered a problem for countries that are heavily reliant on commodity exports.**

One reason for this is that risk-averse consumers spend income on hedging against the risk of large swings in resource prices. Another is that when exporters borrow against high export earnings to fund additional imports and consumption, they may confront worrisome debt burdens when natural resource prices fall.

Empirical evidence confirms that volatility hampers economic growth. When countries suffer from the resource curse, this is aggravated by price volatility. Even in countries where resource abundance has a positive effect on growth, this effect can be overturned by the negative influence of volatility.

### **Volatility in the price of natural resources is also a concern for countries that are heavily reliant on**



imports of these products. This has especially been the case for oil, due to its prominence as an input into production in virtually every sector.

Fluctuations in oil prices affect oil-importing economies through three channels – supply, demand and monetary policy. A rise in oil prices increases the production costs of goods that use oil as an intermediate input. Consumption and investment expenditures on goods and services decline in response to unanticipated energy price increases. Inflationary pressures from rising oil prices may lead to contractionary monetary policy. The empirical literature suggests that changes in demand constitute the strongest influence on changes in oil prices. What is true for oil in this context can apply to any natural resource, but probably to a lesser degree.

See page 72.

## Section D: Trade policy and natural resources

### Information on trade and other policy instruments applied in the natural resource sectors

Standard trade policy instruments are applied to natural resources just as they are to other goods. These include export taxes, tariffs, quantitative restrictions, other non-tariff measures and subsidies, all of which are discussed in the report. However, the motivations and effects of policy interventions may differ in certain ways on account of the particular characteristics of natural resource markets.

**Although only partially comparable across countries, information on export taxes and quantitative restrictions recorded in WTO Trade Policy Reviews (TPRs) suggests that these measures are applied with relative frequency to natural resources.**

On the basis of selective and often highly aggregated information covering different years, it appears that while natural resources represent approximately 24 per cent of all sectors, about one-third of all export taxes recorded in TPRs cover natural resource sectors. Export taxes occur with greater frequency in fishing and forestry than in fuels and mining.

Evidence on quantitative export restrictions suggests that, where these are present, it is often for the declared purpose of conserving exhaustible natural resources. Information on other forms of export restrictions notified to the WTO also mainly relates to natural resources.

**Tariffs are generally low in the natural resources sector, although tariff escalation is present. Certain non-tariff measures are also applied.**

The incidence of tariffs in the natural resources sector is generally lower than for overall merchandise trade. The only exception to this is fisheries, where for developing countries tariffs are higher than for all merchandise imports. Fuels and mining products attract the lowest rates. Bound rates on natural resources are often higher than applied rates, with the amount of “water” between the two being greater for developing countries.

Tariff escalation appears to be present in some natural resource goods, such as forestry and mining, but not in others, such as fuels. However, if one focuses on developed country markets only, the extent of tariff escalation appears greater and applies to fuels as well.

The most common types of non-tariff measures applied to the natural resource sectors are: (i) technical regulations (product characteristic requirements, labelling requirements, testing, inspection and quarantine requirements, etc.); (ii) non-automatic

licensing (licence combined with or replaced by special import authorization, prior authorization for sensitive product categories, etc.); and (iii) import prohibitions. The frequency of non-tariff measures is greater in fisheries than in either forestry or fuels.

**Domestic and trade policies in natural resources are often substitutable in terms of their economic effects**

Because of the geographical concentration of natural resources, measures affecting domestic production or consumption have a considerable impact on exports or imports. For example, a country that imports all its oil and charges a consumption tax on it achieves the same effect on trade as if it levied a tariff. The legal distinction between these two interventions is important, however, since the WTO and other international agreements typically cover tariffs, but not consumption taxes.

**The incidence of measures other than tariffs and other trade (non-tariff) measures vary significantly among countries and categories of natural resource products.**

In the case of fuels, for example, domestic taxes tend to be higher and several orders of magnitude greater than tariffs on fuels. Subsidies to fisheries are large in absolute terms and as a share of total production.

**Trade policy, resource distribution and exhaustibility**

**For exhaustible and finite natural resources, the effects of trade policy depend not only on the level of interventions but also on the evolution of a policy over time. Only a few studies have looked at the dynamic effects of trade policy on natural resources.**

The available literature on this dimension of trade policy has focused exclusively on import tariffs and consumption taxes. A major result from these studies is that if a government can pre-commit to a constant tariff, the price and extraction path of a natural resource will remain unaffected. Trade policy may also face time consistency problems. An initial policy stance, for example, may come under pressure as market dynamics unfold. Policy consistency over time is therefore a challenge for governments.

**The quest for scarcity premiums (economic rents) is one explanation for using trade measures in non-renewable resource sectors.**

Tariffs cannot move production from one location to another if natural resources are location-specific and immobile, making rent-shifting – whereby resource-importing countries seek to extract rents from resource-exporting countries – a motive for using such measures. More generally, the availability of large rents in scarce natural resources provides a strong incentive for rent-seeking behaviour.

**While import tariffs shift rents from the exporting to the importing country, export taxes shift rents from the extracting company to the government, and export quotas shift rent from the future to the present.**

Even if the immediate effect of a tariff is to increase the domestic price in the importing country, rigidity in supply means that the burden of the tariff will eventually fall on the exporter. The export price will fall to the point where the tariff-inclusive price in the importing country is equal to the price prevailing before the introduction of the tariff.

When all resources extracted are exported, an export tax on a non-renewable resource constitutes a transfer of resources rents from the producer to the government. In these circumstances, there is only one export price at which all available resources will be demanded and the producer will bear the full burden of the tax. There will be no effect on export prices (terms-of-trade effects).

A quota on natural resources will increase prices, but this will result in higher extraction rates and lower prices in the future. If all production is exported, an export (or production) quota shifts rents from the future to the present.

**There may be a terms-of-trade argument in the case of a large supplier for taxing exports of exhaustible natural resources, thereby increasing the price of exports relative to the price of imports. However, certain qualifications apply to this argument.**

When resources are also consumed domestically, an export tax is equivalent to a subsidy on domestic consumption – or dual pricing – in terms of price and quantity effects. Therefore, overall welfare considerations in relation to the effect of an export tax on the resource-producing sector should be taken into account.

When a country is large enough to increase world prices by taxing its natural resource exports, thus inducing terms-of-trade gains at the expense of importing countries, overall world welfare will be reduced. This is why terms-of-trade motivations for trade measures are referred to as beggar-thy-neighbour policies.

In the long run, higher export prices resulting from taxes may provide an incentive for the development of substitute products, new resource-saving technologies, or the exploitation of new resources. Importing countries may also retaliate by imposing taxes on imports of other products. Short-run national terms-of-trade gains need to be measured against the long-term costs of higher demand uncertainty.

**Export taxes and other trade policies may also be justified to address a variety of other policy objectives, including problems related to natural resources volatility and dominance in a domestic economy setting. However, the use of trade measures in a number of these circumstances is not without hazards.**

Export taxes on a natural resource reduce the domestic price of the product in question. This can help to soften the impact of rapidly rising world prices in the domestic market, thus protecting local consumers. Many natural resource economists would argue that this is a second-best way of addressing income instability problems, to be used only where the first-best option of developing efficient stock exchanges and financial markets is not attainable.

Export taxes have also been used to avoid de-industrialization (the so-called Dutch disease) and to promote infant industries or diversification. Since natural resources are used as inputs in many higher-value added industries, export taxes can work as an indirect subsidy to manufacturing by reducing the price of resource inputs. The justification for such second-best measures rests on some form of market imperfection, including in this instance a learning-by-doing argument.

**Subsidies can have rent-shifting and beggar-thy-neighbour effects, but they may also be used to address legitimate policy objectives.**

Economic theory generally supports the use of subsidies in case of market failures. A well known case is that of “green” subsidies. For instance, when deciding how much to invest in the development of a technology that reduces extraction emissions, a firm will compare the private benefits of producing the new technology with its private costs. Since a firm will not fully take into account the environmental benefits to society, it will under-invest. This market failure could justify government intervention in the form of subsidies.

Another interesting example is that of exploration subsidies. A key feature of non-renewable natural resources is that their supply is uncertain. Companies invest in exploration to discover new deposits. Also in this case the market may fail and governments may need to intervene. Examples of these market failures include spillover of geological information and the hold-up problem arising because of the sunk costs of exploration.

### **Trade policy and exhaustibility: The problem of open access**

**The first-best solution to the problem of open access is to strengthen the property rights regime. If this option is unavailable or very costly, a government may consider measures that directly affect production or trade.**

A production tax on a natural resource can also serve as a first-best policy instrument if it is set at a level that results in the internalization of the effects that producers have on each other's productivity. A similar argument could also be made for a production quota on the harvest of the natural resource.

Although export taxes will not correct the absence of property rights, they can limit the over-exploitation of

the natural resource base. However, the use of an export tax has a beggar-thy-neighbour effect because the increase in welfare of the exporting country comes at the expense of the welfare of its trading partner. The importing country will suffer a terms-of-trade decline.

By lowering the domestic price of a natural resource, an export tax could also encourage an unsustainable level of domestic consumption of a resource. Such an outcome could be avoided through measures that ensure a sustainable level of resource extraction.

Subsidies to natural resource industries, such as fisheries, will worsen the exploitation of stocks that already suffer from open access. However, the impact on harvest and trade is ambiguous. If the effort required to increase the harvest is too great because of the prevailing degree of over-exploitation, the subsidy may actually reduce production.

### **Natural resource externalities and environmental policy**

**Recognition of the link between environmental externalities and resource depletion is key to an efficient implementation of environmental policy.**

The economic literature argues that an *ad valorem* tax that varies over time delays depletion and slows down adverse environmental effects of resource exploitation. When environmental damage increases over time, the optimal level of a time-varying tax will depend on the interaction among different factors, such as the natural rate of decay, the initial stock of accumulated environmental damage, and the extent to which consumers disregard the future impact of today's actions (the discount rate).

The extraction and use of resources, such as fossil fuels, has a negative effect not only on the country using or extracting such resources, but also on the global environment. In such a situation, an agreement among nations to increase taxes uniformly beyond a nationally determined optimum tax level is necessary to provide an efficient allocation of the resource over time.

In order for an environmental policy to be effective, it should be implemented rapidly after it has been announced. This is to avoid an acceleration of resource extraction and aggravation of the associated environmental damage prior to implementation of the policy.

**When biodiversity loss is a consequence of a decrease in the total stock of a resource, the effect of a tariff on the harvested good depends on the principal causes of a decrease in the total stock of the resource, and hence on habitat destruction.**

Habitat destruction can be a direct result of over-harvesting or it may arise as a result of the expansion of substitute economic activities that compromises habitat conversion. In the first case, a trade policy such as a

tariff would be optimal because it would decrease the rate of resource extraction and reduce habitat loss. However, in the second case the effect of a tariff is ambiguous because it affects habitat conservation both through reducing resource extraction and expanding other economic activities.

**If habitat is affected adversely by the conversion of resources to other uses, environmental standards and eco-label schemes could efficiently address the problem.**

While mandatory environmental standards set quality conditions to be adhered to by each producer, an eco-label is a certification scheme that provides information to consumers, helping them to identify environment-friendly products. An eco-label can only achieve its objective if consumers hold preferences for environmental amenities. In that circumstance, eco-label schemes may be able to achieve similar environmental goals to those of environmental standards. Moreover, in situations where governments cannot impose an environmental standard on foreign firms, an eco-label scheme is the most efficient policy to implement.

### **The political economy of trade policy in natural resource sectors**

**The socially optimal rate of resource extraction may be hard to obtain when trade and conservation policies are influenced by special interest groups. The effect of trade opening on resource extraction in this context is ambiguous.**

A number of studies point to the possibility that the rate of resource utilization may be greater than the socially optimal rate because of poor governance or lobbying activities. This is particularly true in countries where institutional checks and balances on government activity are weak.

Trade openness affects both incentives to lobby the government and the quality of institutions in which policy-makers operate. While the effect on lobbying is ambiguous, recent studies highlight a positive effect of trade on institutional quality and hence on efficient resource utilization.

**In the presence of lobbying activities, international transfers are the most appropriate policy to address negative cross-border effects associated with the excessive extraction of resources.**

By inducing the exporting government to increase resource stocks, international transfers such as debt-for-nature swaps are the first-best policy to improve management of a natural resource whose depletion creates negative cross-border effects ignored by the market (externalities). A trade sanction may have exactly the opposite effect as it hurts the politically organized resource sector.

### **National resource abundance and regional integration**

**A two-way relationship exists between natural resources and regional integration. Regional integration affects resource-rich and resource-scarce countries differently. These effects, in turn, shape the incentives for these countries to engage in regional integration.**

The integration of two resource-abundant countries with low tariffs and non-tariff barriers on natural resources, and similar production structures with limited manufacturing activity, is likely to lead to limited trade creation and potentially large trade diversion effects. On the other hand, regional integration may enable a resource-abundant country to diversify its production and export structure by relaxing the constraints it faces in developing a manufacturing sector.

Regional integration may assuage concerns about over-exploitation of natural resources and other potential negative consequences of international trade on the environment as provisions on natural resource management are sometimes included in regional and bilateral free trade agreements.

See page 112.



## Section E: Natural resources, international cooperation and trade regulation

### Trade in natural resources and WTO rules

**The WTO does not have an agreement specifically regulating trade in natural resources, but a number of WTO rules covering goods and services are relevant. These have been analysed in terms of the five characteristics of natural resource markets that were identified in this report.**

#### Uneven global distribution

Article II of the General Agreement on Tariffs and Trade (GATT) constrains WTO members from applying tariffs at rates higher than those “bound” in their schedules of concessions. The General Agreement on Trade in Services (GATS) also establishes schedules of specific commitments on the terms on which markets may be accessed. Article I and Article III of the GATT lay out rules on non-discrimination, as does Article II of the GATS. Article XI provides that no prohibitions or restrictions other than duties, taxes or other charges may be imposed on the importation of any product or on the exportation or sale for export of any product. Where such restrictions are exceptionally permitted as a matter of public policy, Article XIII requires that measures are applied in a non-discriminatory fashion. Article XVII seeks to ensure that state trading enterprises conduct their activities in a non-discriminatory manner on the basis of commercial considerations. Article V of the GATT sets out rules that apply to goods that are in transit.

#### Exhaustibility

The Agreement on Subsidies and Countervailing Measures prohibits export subsidies and sets out disciplines on subsidies that cause adverse effects to other WTO members. Some natural resources that are agricultural products, such as certain raw materials and forestry products, are subject to the Agreement on Agriculture, which also includes rules on subsidies. WTO members are currently negotiating specific rules on fisheries subsidies as part of the Doha Round of trade negotiations.

Some of the public policy exceptions in Article XX of the GATT are particularly relevant to the issue of exhaustibility. Sub-paragraph (g) allows measures relating to the conservation of exhaustible natural resources. Sub-paragraph (j) allows WTO members to take measures that are essential to the acquisition or distribution of products in general or local short supply. However, any such measures must be consistent with the principle that all members are entitled to an equitable share of the international supply of such products.

#### Externalities

Eco-labels may be used to manage the un-priced negative effects of economic activity on the environment. The Agreement on Technical Barriers to Trade defines technical regulations as documents that lay down product characteristics or their related processes and production methods. Similar language is used in the definition of voluntary standards. The second sentence of both definitions refers to labelling requirements “as they apply to a product, process or production method”.

The Agreement on Sanitary and Phytosanitary Measures recognizes that WTO members have the right to adopt sanitary and phytosanitary measures to protect human, animal or plant life or health. Article XX(b) also permits the adoption of measures that are necessary to protect human, animal or plant life or health. Article XX(d) permits the adoption of measures that are necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of the GATT. The rules in the Import Licensing Agreement may be relevant where licences are used, for example, to control imports of forestry products made from legally harvested timber.

The Agreement on Government Procurement may impose conditions on the purchases of central and sub-central government entities as a means of minimizing externalities, such as the negative environmental consequences of certain practices.

Article XI(2)(a) provides an exception to the ban of export restrictions by allowing WTO members to impose them temporarily “to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party”. The Agreement on Agriculture also contains provisions on export restrictions.

#### Dominance

Dual pricing mechanisms – establishing a different domestic price from the export price – have been used by some governments as a means of diversifying the domestic production structure. Such mechanisms include export taxes and restrictions, state monopolies, and maximum domestic prices on natural resources. Some have suggested that dual pricing practices constitute an actionable subsidy, but no agreement or authoritative legal interpretation exists on this point.

Article XX(i) permits measures inconsistent with WTO agreements if these measures involve restrictions on exports of domestic materials where such restrictions are necessary to ensure essential quantities of such materials to a domestic processing industry.

#### Volatility

Price stabilization is one of the principal objectives of international commodity agreements. Article XX(h) of the GATT provides a specific exception for measures taken under such agreements. This provision may be of limited relevance today, at least for the natural resource sectors covered by this report.

## Rules of international law relevant to natural resources

**The WTO is part of a much broader framework of international cooperation and many aspects of natural resources are regulated by other rules of international law outside of the WTO.**

The WTO does not regulate ownership of natural resources. There is a vast corpus of customary and treaty law regarding sovereignty over territories, land masses, bodies of water and the seabed. This corpus of law is relevant in terms of the allocation of property rights over natural resources as between states. In the 1960s and 1970s, several international instruments were adopted in which developing countries sought to reassert state sovereignty over natural resources in relation to foreign investors.

International commodity agreements established mechanisms to stabilize the prices of natural resources and were also seen as tools to correct the declining terms of trade of developing country exporters. The only international commodity agreement related to products covered by this report that remains operational today is the International Tropical Timber Agreement, and its objectives have been broadened. The International Tin Agreement and the International Natural Rubber Agreement were terminated. Agreements between producer countries are more relevant today. OPEC is the most prominent of such agreements.

Some trade agreements include obligations that go beyond the obligations in the WTO relevant to natural resources. For example, certain bilateral and regional agreements prohibit new export taxes or abolish them completely. The Energy Charter Treaty's disciplines on transit go beyond those found in Article V of the GATT.

A large number of international agreements establish mechanisms for cooperation between states to deal with international externalities. Many of these relate to environmental protection. Corruption is another issue on which states have cooperated.

Bilateral investment treaties seek to resolve what is known as the hold-up problem – a situation where the contractual agreement between two parties is affected by concerns that one party will gain undue bargaining power once investment by the other party has been committed – and play an important role particularly in relation to minerals and energy resources.

**The relationship between the WTO agreements and general international law has been the subject of much discussion in recent years and the debate is not firmly settled.**

WTO agreements offer avenues for WTO members to reconcile their WTO obligations with those under other international agreements. At a broader level, the UN International Law Commission has identified several

principles that may be of assistance when seeking to understand the relationship between different international norms.

**One of the issues that has received the most attention is the relationship between the WTO and multilateral environmental agreements.**

The 1994 WTO Decision on Trade and Environment states that “there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment”.

A similar call for coherence between environmental measures and the multilateral trading system is reflected in the Rio Declaration on Environment and Development. To date, no trade measure taken under a multilateral environmental agreement has been found to be incompatible with WTO obligations by a dispute settlement panel or the Appellate Body.

## Regulating natural resources trade: Challenges and policy implications

**A number of challenges for international cooperation are highlighted here. The list is not exhaustive, nor is there any implication in the selection of these issues that they should necessarily be negotiated in the WTO, or even that they all fall within the scope of agreed WTO competence.**

### Export policy

The first challenge relates to export policy in the form of export taxes and restrictions. A key economic rationale of WTO rules is to stimulate cooperation among trading partners in areas where they can harm each other by acting unilaterally. A large country can improve its terms of trade at the expense of its trading partners by imposing export restrictions and shifting economic rents. The reduction in supply will push up the world price and drive a wedge between this price and the domestic price. As in the tariff case, two large countries restricting their exports to each other could both end up worse-off. Commitments on export taxes could be exchanged either amongst exporters using such measures or for concessions on import tariffs, as export taxes are often associated with tariff escalation in the importing country. Broader trade-offs would of course also be possible.

Two points should be made here. Firstly, the issues surrounding export policy are not unique to natural resources. They have more general application. Secondly, whether or not export taxes change world prices, governments may resort to them other than for terms-of-trade and rent-shifting reasons. Export taxes may be intended to raise revenue, stabilize income, diversify the domestic and export structure of the economy, address escalating tariffs of trading partners along production chains, and meet environmental

objectives. The theoretical analysis in the report of the case for export taxes (and sometimes quantitative restrictions) also points out some of the potential limitations of these policy choices.

### Sustainable exploitation of natural resources

While existing WTO rules offer flexibility to accommodate the sustainable exploitation of natural resources, there may be a case for expanding this flexibility in certain areas. For instance, certain subsidies can be an important domestic policy tool for governments to manage a natural resource or to address the environmental impact associated with its use. Provisions under Article 8 of the Agreement on Subsidies and Countervailing Measures that deemed environmental subsidies non-actionable – that is, not subject to challenge in the WTO or to countervailing measures – expired at the end of 1999, and WTO members did not agree to extend them. It is unclear whether the general exceptions in Article XX may be invoked to justify environmental/conservation subsidies.

### Different policies with similar outcomes

Another challenge arises where certain domestic and trade measures are subject to different disciplines, even though they have the same economic impact. Where countries importing a natural resource do not produce it, and countries exporting it use very little of it, trade measures and domestic measures can be close substitutes. With natural resources, a production quota, for example, is often equivalent to an export quota and a dual pricing scheme often has an effect similar to that of an export tax. This, in turn, has an effect equivalent to that of a consumption subsidy. In these cases, regulating only one of the equivalent measures is often insufficient to achieve undistorted trade in natural resources.

### Managing short-run exigencies with long-run costs

Because natural resources are either finite or exhaustible, current policies and their future consequences bear a particularly important relationship. International rules such as those negotiated at the WTO can provide an anchor to help governments ignore short-run incentives and pursue sustainable policies. One example of a measure that may be beneficial in the short run, possibly for political economy reasons but which does not serve the long-run interest of the country, is subsidies for the exploitation of a resource with an open access problem. The WTO negotiations on fishing subsidies address exactly this sort of problem. The recent G20 mandate to review consumption subsidies on fossil fuels, which have a negative environmental impact, has a similar purpose.

### Transit and trade in natural resources

Although trade in most of the natural resources covered by this report moves relatively unimpeded, a number of issues have arisen in relation to the transit across jurisdictions of traded natural resources. This issue has risen in particular with energy products. The freedom of transit obligation in GATT Article V plays an important

role in facilitating the flow of goods across the world. However, alternative views regarding the scope of Article V in the case of transport via fixed infrastructures, such as pipelines, creates regulatory uncertainty. This uncertainty carries economic costs.

### Improving legal clarity and coherence among international agreements

One issue here relates to the blurred nature of the border between the GATT and the GATS with respect to activities surrounding the exploitation and processing of natural resources. This reduces the predictability of multilateral rules. A second, and perhaps more important, issue concerns the relationship between the WTO and other international agreements. Many aspects of natural resources are regulated by international rules outside the WTO and a number of challenges can only be effectively confronted through better global governance. Many discussions on international issues facing natural resources have to proceed on several multilateral fronts, and coherence is important.

See page 160.

## Section F: Conclusions

**The analysis in this report argues strongly for cooperation. The importance of natural resources to virtually every aspect of human activity, and the particular characteristics of these products, make it vital that governments work together to find common ground and appropriate trade-offs. Such cooperation should aim to ensure sound resource management, equity and mutual gain.**

The trade aspects of cooperation have been a particular focus of the report, and the case has been made for seeking accommodation through effective multilateral trade rules. Well-designed rules on trade are not only about securing the standard gains from trade; they are also a key component of cooperation in domains such as environmental protection and domestic policies to manage scarce resources.

See page 200.