



Sustainable
United Nations

Sustainable Procurement Guidelines

FREIGHT FORWARDING

BACKGROUND REPORT



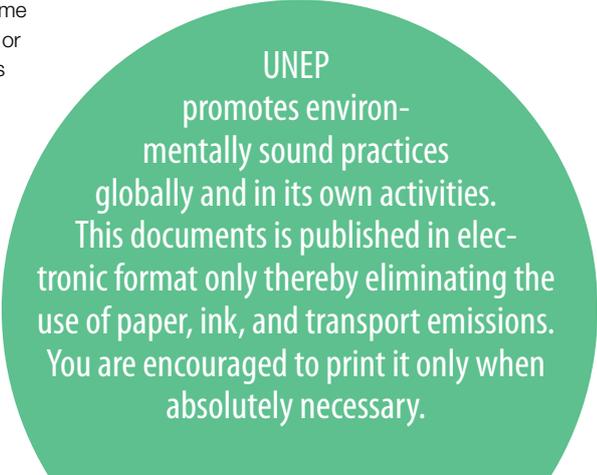
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Messages from the United Nations and UNEP

"I would like to make a public commitment. We are already moving towards making our Headquarters in New York climate-neutral and environmentally sustainable. I would like to see our renovated headquarters complex eventually become a globally acclaimed model of efficient use of energy and resources. Beyond New York, the initiative should include the other UN headquarters and offices around the globe.

We need to work on our operations too, by using energy more efficiently and eliminating wasteful practices. That is why, today, I am asking the heads of all UN agencies, funds and programmes to join me in this effort. And I am asking all staff members throughout the UN family to make common cause with me."



Ban Ki-moon
UN Secretary General
New York, 5 June 2007
World Environment Day



Achim Steiner
Executive Director, UNEP
Geneva, 8 October 2007
117th Assembly of the Inter-Parliamentary Union

"Ban Ki-moon is determined to put global warming at the top of the global political agenda and determined to build the trust so urgently needed if we are to succeed in combating climate change. Under his leadership, the UN is also determined to demonstrate its 'sustainability credentials' by action on the ground and by good housekeeping at home.

Reviews are underway across all agencies and programmes to establish a strategy for a carbon neutral UN and to make the refurbishment of the UN headquarters in New York a model of eco-efficiency.

UNEP is committed to take part in the fight for climate change and in showing leadership. We are committed to become carbon neutral by reducing our energy consumption and carbon footprint and by offsetting emissions."

Acknowledgements

UNEP gratefully acknowledges the time and effort spent by those involved in producing and commenting on these Sustainable Procurement Guidelines for Freight Forwarding.

These guidelines were prepared by Erik van Agtmaal from Altimedès Consulting under the supervision of the UNEP Division for Technology Industry and Economics (DTIE) and UNOPS.

Altimedès Consulting (www.altimedès.com) is a Brussels based international management consulting firm combining a strong expertise in horizontal logistics collaboration, energy management, corporate responsibility and sustainable development in the freight transport and logistics sector. Altimedès collaborates with public authorities and clients in the private sector to help them reach much higher performance levels in energy efficient and sustainable freight transportation, logistics and supply chains. Altimedès is a founding member of the Green Logistics Consultants Group (www.greenlogisticsconsultants.com), a global collaborative network of consulting companies with a focus on sustainable transportation and logistics.

The work builds on the extensive experiences of Altimedès and of the Partnership for Clean Fuels and Vehicles led by UNEP (www.unep.org/transport/pcfvl/).

On the UNEP side, the work was coordinated by Isabella Marras and Cécile Bordier, team members of the Sustainable United Nations (SUN) Unit. On the UNOPS side, it was coordinated by Niels Ramm and Nives Costa.

The set of guidelines were developed thanks to the valuable input and technical advice of UN colleagues and experts outside of the UN and in particular, Rob de Jong from UNEP, Dani Appave, Cleopatra Doumbia-Henry David Macdonald, Marios Meletiou and Georges Politakis from ILO, Dmitri Davydov and Laurent Blanc from UNICEF, Lorenzo Gavilli and Ted Thrasher from ICAO, Brice Martin-Castex from IMO, Jean-Pierre Leroy from WFP, Elske van de Fliert and Sofie Luyten from ALTIMÉDES and Thad Mermer (design).

Purpose of this guide

What is Sustainable Procurement?

“Sustainable Procurement practices integrate requirements, specifications and criteria that are compatible and in favour of the protection of the environment, of social progress and in support of economic development, namely by seeking resource efficiency, improving the quality of products and services and ultimately optimizing costs.”¹

Sustainable Procurement practices should be introduced progressively and in full respect of the right of access to the UN market for suppliers from developing countries and countries with economies in transition.

How to use the Sustainable Procurement Guidelines?

The main goal of the Guidelines is to facilitate the implementation of sustainable procurement by providing criteria that may be used by UN staff for the requisition and procurement of goods, civil works and services.

In practice, this means thinking carefully about what the true needs are, as a first step. Then, basing purchasing decisions (for products, services and works) on the lowest environmental impact and most positive social impact which make the most economic sense over the lifetime of the product. Therefore, the guidance covers the following: key environmental impacts, key social considerations, most appropriate means of verification and information on the availability of sustainable products and lifetime costs (where available).

As with local product availability, prices, costs and relevant legislation may vary considerably between regions. The way sustainable procurement is practiced should be adapted to local conditions and markets, and depends on how ambitious the purchasing organization is in terms of sustainable development.

For these reasons, the UN Sustainable Procurement Guidelines comprise of the following for each of the addressed products and services:

- a detailed **background report**, and
- a practical **product sheet**.

The main role of the **background report** is to provide staff involved in procurement with more comprehensive information on the rationale behind the sustainable procurement guidelines presented in the product sheets. The background reports cover various issues related to purchasing a product and service in an environmentally-friendly and socially-responsible way, such as: identifying the key environmental impacts and social considerations, listing the most appropriate schemes for verification, most relevant legislation regarding the environment and social considerations, and providing an indication of the availability on the market of sustainable products.

The **product sheets**, on the other hand, provide sustainability criteria designed specifically for the various phases or steps of the UN procurement cycle. These are: detailing the subject matter of tenders, technical specifications (or terms of reference, for services), sourcing suppliers evaluation criteria and contractual clauses. Guidance is also provided on how compliance with the criteria should be verified. The criteria are also presented in check-list form for use by requisitioners and a weighting matrix is provided.

¹ Definition adopted by the High Level Committee on Management Procurement Network.

Regional differences

As market conditions vary from region to region, the potential for sustainable procurement may also vary. Therefore, for certain product groups different product sheets may be produced for different regions. The region for which each product sheet is produced for will be clearly indicated on the document itself and also on the SUN Greening the Blue website and the UNGM SP knowledge centre where they can be downloaded.

Differences in ambition

Additionally UN procurers must decide whether they wish to apply the “basic” or “advanced” criteria:

- **Basic sustainability criteria** address the most significant environmental and social impacts and require minimum effort in verification and minimal increases (if any) in price
- **Advanced sustainability criteria** are intended for use by procurers who seek to purchase the most advanced environmentally-friendly and socially-responsible products available on the market, and may require additional administrative effort or result in a price increase as compared to other products fulfilling the same function.

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Abbreviations and Acronyms

| | |
|-----------------------|---|
| CH₄ | Methane |
| CO | Carbon Monoxide |
| CO₂ | Carbon Dioxide |
| CSR | Corporate Social Responsibility |
| ECAs | Emission control areas |
| EIAPP | Engine International Air Pollution Prevention (certificate) |
| ESI | Environmental Ship Index |
| FAO | Food and Agriculture Organization of the United Nations |
| GHG | Greenhouse Gas |
| HFC | Hydrofluorocarbons |
| IASC | Inter-Agency Standing Committee |
| ICAO | International Civil Aviation Organization |
| ILO | International Labour Organization |
| IMO | International Maritime Organization |
| kW | Kilowatt, a measure of power |
| LSP | Logistics Service Provider |
| NMVOCs | Non methane volatile organic compounds |
| NO_x | Nitrogen Oxides |
| O₃ | Ozone |
| PM | Particulate Matter |
| PPM | Parts Per Million |
| RF | Radiative forcing |
| SO₂ | Sulfur Dioxide |
| SO_x | Sulfur Oxides |
| VOC | Volatile organic compound |
| WFP | UN World Food Programme |
| UNDP | UN Nations Development Programme |
| UNFPA | UN Populations Fund |
| UNICEF | United Nations Children's Fund |

1. Introduction

The procurement of freight transportation services is important within the UN. Freight transport is one of the top ten items purchased by many UN organizations including the FAO, UNFPA, WFP, UNICEF and UNDP.

The potential of Sustainable Procurement as a policy instrument has been increasingly recognized, and over recent years there has been a growing commitment at different levels to integrate sustainability aspects in procurement decisions and to use the procurement process to raise awareness and to create incentives for suppliers to improve their sustainability performance.

Sustainable procurement of freight transportation services is rather recent and has only partially been integrated in the procurement policies of public and private organizations but initiatives in this field are growing in many parts of the world. The use of procurement as a leverage to improve the environmental performance of carriers is a keystone in programs such as the public private SmartWay program from the US Environmental Protection Agency and in other initiatives such as the BSR Clean Cargo Workgroup in the maritime container sector. These programs have shown that sustainable procurement of freight transport services can make a significant contribution to the policy goals of sustainable development and efficient resource usage. It is also an instrument to minimize reputation risk of social exploitation and environmental damage caused by freight transportation.

This background report, together with the practical product sheet, constitutes the sustainable procurement guidelines for freight forwarding for the UN system. While these guidelines are aimed at UN organizations they can be of benefit to other public and private organizations.

The main objective of this background report is to provide comprehensive information on the sustainable challenges in the freight transport industry; how freight forwarders and transport companies can improve their sustainability performance, and information on which and how sustainability procurement criteria and requirements can be defined and integrated in the different phases of the procurement cycle.

Sustainable procurement of freight forwarding services means making sure that the freight transport services on behalf of UN organizations are, or will become, as sustainable as possible – with the lowest environmental and most positive social impact alongside value for money considerations such as price and service. To make this possible, clear sustainability targets and requirements should be developed by UN organizations and procurement departments. Although these targets should be ambitious it should be recognized that the diversity of freight transportation needs in the UN and the wide variety in transport market circumstances require some flexibility. Sustainable procurement targets and requirements must be feasible for procurers and for transport service providers and should be adapted to specific procurement and freight forwarding situations.

2. Scope

Freight transportation can be defined as all activities to move commodities. These activities include transportation by trucks, aircrafts, ships, barges, railways, and related logistics activities such as handling and storage. In this background document we will cover all main freight transportation modes with the exception of transport via pipelines.

UN organizations procure transport and logistics services organized by freight forwarders or performed by logistics service providers, warehouse operators and carriers. The duration of service contracts varies from long term contracts of several years to the procurement of transport services on the spot market. Food and non-food products are shipped from one continent to another but also sourced locally and transported over short distances. Maritime transport, air cargo and road are the most used transport modes but train and barges are used in some cases as well.

Freight transport service providers to UN agencies can be classified according the main services provided by these companies into:

- Freight Forwarders;
- Logistics Service Providers; and
- Carriers.

A **Freight Forwarder** is a company that organizes shipments for other companies. A forwarder is often not active as a carrier and acts only as an agent of a principal (typically a shipper, consignee or carrier) to dispatch shipments via asset-based carriers.

A **Logistics Service Provider** (LSP) is a firm that provides multiple logistics services for use by customers. Among the services LSPs provide are transportation, warehousing, cross-docking, inventory management, packaging, and/or freight forwarding. Their role is different from freight forwarders in the sense that LSPs maintain a significantly greater degree of control over their logistics and transportation operations. LSPs can be asset or non asset based.

A **Carrier** is a transport firm which actually performs the transportation services and often but not necessarily owns the means of transportation.

The sustainability challenges of the freight transportation industry can be categorized into several major areas: Social, Environment, Security and Business Ethics. These challenges are to some extent common for all freight transport modes but each transport mode has its own specific challenges as well.

The values enshrined in the United Nations (UN) Charter: respect for fundamental human rights, social justice and human dignity, and respect for the equal rights of men and women, serve as the overarching goals that suppliers to the UN are expected to achieve. Following topics are covered in this document:

- The sustainability challenges of the freight transportation sector;
- Key environmental impacts of freight transportation;
- How to improve the environmental performance of freight transportation;
- Key social considerations;
- Relevant legislation and international conventions;
- Risk management;
- How to develop a sustainable procurement policy for freight forwarding.

3. Key environmental impacts

About all of the energy used by the freight transport sector is derived from petroleum. Non petroleum energy such as electricity generated by other energy sources than petroleum comprises only a very small percentage and is currently only relevant for rail transport in some parts of the world. Freight transportation is a major source of greenhouse gases and air pollution such as nitrogen oxides (NO_x), particulate matter (PM), sulfur oxide gases (SO_x) and a large group of (non regulated) toxic air pollutants. The emission of air pollutions contributes to serious adverse health and environmental effects in particular in urban areas and in the vicinity of seaports and airports.

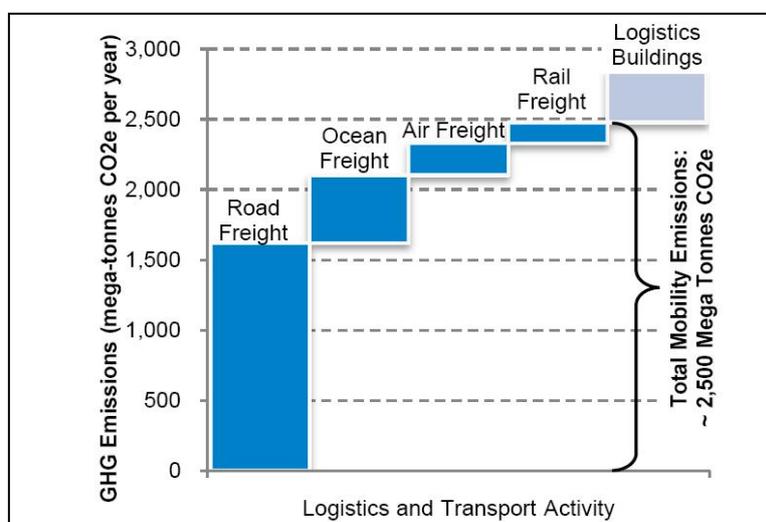
Other environmental impacts include ozone depleting substances, noise, garbage from disposal of vehicles and vessels and in the maritime sector pollution from oil by accident or from ship tank cleaning operations, sewage and garbage, invasive species in ships' ballast water and harmful anti-fouling paints.

3.1 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases in the atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the natural phenomenon called greenhouse effect. In the absence of GHGs, the temperature of the earth would be -19°C. The main greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and ozone.

Since the beginning of the industrial revolution, atmospheric concentrations of CO₂ have increased by 36 percent, CH₄ concentrations have more than doubled, and N₂O concentrations have risen by approximately 18 percent, which cause climate change.²

Transport is a significant contributor to overall greenhouse gas emissions. The transport sector as a whole accounted for approximately 13% of overall GHG emissions and 24% of CO₂ emissions from fossil fuel combustion in 2006. On a well-to-wheel basis, the International Energy Agency estimates that passenger and freight transport accounts for nearly 27% of total CO₂ emissions from fossil fuel combustion. Road freight transportation accounts for the largest part of GHG emissions from freight transportation followed by maritime transportation.



Source: World Economic Forum: Supply Chain Decarbonization, Feb. 2009

² Intergovernmental Panel on Climate Change (IPCC) (2007) Fourth Assessment Report, Climate Change 2007

An additional source of greenhouse gases than the combustion of fuel or other energy sources to power vehicles and vessels are an array of processes that also produce additional GHG emissions which can be allocated to transportation. These include the production and distribution of fuels for transportation, the manufacture and disposal of vehicles and vessels and the construction, maintenance and disposal of transportation infrastructure. These supporting processes are known as the fuel, vehicle manufacture, and infrastructure cycles and are generally not included in transportation sector GHG estimates. These processes are important elements of the transportation life cycle and are increasing GHG emissions by up to 50 percent more than operating emissions alone.³

In addition to CO₂, the combustion of fossil fuels by freight transportation produces other GHGs including methane (CH₄), nitrous oxide (N₂O), carbon monoxide (CO), non CH₄ volatile organic compounds (VOCs)⁴ and hydrofluorocarbons (HFC). Carbon dioxide accounts for about 96 percent of the transportation sector's global warming potential, weighted GHG emissions. Methane and nitrous oxide together account for about 2 percent of the transportation total GHG emissions. The emissions of methane and nitrous oxide are influenced by the type of vehicle/vessel, type of engine and emissions control equipment.

The 'tailpipe' emissions of CO₂ depend on only two factors; the carbon content and the quantity of the fuel burned.

Unlike air pollutants, CO₂ and other GHGs are global in nature. CO₂, CH₄, N₂O and HFCs are all well-mixed in the atmosphere and long-lived, lasting from years to many decades. While these gases account for a majority of observed global warming effects, human activities produce short-lived and spatially variable emissions that may also have a significant warming effect. Two substances closely associated with the transportation sector are tropospheric ozone and black carbon.⁵

Tropospheric ozone is estimated to have the third-largest increase in radiative forcing⁶ since the pre-industrial era, behind CO₂ and CH₄. It is produced when precursors such as nitrogen oxide (NO_x), carbon monoxide (CO) and non methane volatile organic compounds (NMVOCs) react with sunlight in the atmosphere. Motor vehicle exhaust accounts for a majority of NO_x and CO emissions, and is also the largest source of NMVOCs.

Black carbon is the solid fraction of particulate matter smaller than 2.5 micrometers (PM_{2.5}) that causes warming by both absorbing solar radiation in the atmosphere and by reducing the reflectivity of snow and ice. The net impact of these two warming effects is estimated to be slightly lower than that of ozone, albeit with a higher degree of uncertainty. Black carbon is emitted from incomplete combustion processes, especially the burning of diesel fuel.

Unlike CO₂ emissions, ozone precursors and black carbon can be restricted by emissions controls. Both have been significantly reduced by earlier control technologies and are expected to be further reduced by emissions regulations.⁷

3.2 Air Pollutants

The major transport air pollutants are particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NO_x), and sulfur oxides (SO_x).

Exhaust emissions of particulate matter (PM₁₀ and PM_{2.5}) and nitrogen oxides (NO_x), depend primarily on the type of fuel, the engine technology and exhaust gas after treatment

³ US Department of Transport

⁴ Volatile Organic Compounds are sometimes called hydro carbons (HC or CH)

⁵ Transportation's Role in Reducing U.S. Greenhouse Gas Emissions, US Department of Transportation, April 2010

⁶ Radiative forcing quantifies, in relation to a year reference, the changes in radiation, or the energy reflected back towards the surface due to greenhouse gases.

⁷ UNEP and WMO, "Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers", 2011

technology as well as speed and driving behavior for road and rail transport and the landing and take-off approach of aircrafts.

The amount of SO_x emissions is primarily dependent on the sulfur content of the fuel and the quantity of fuel burned.

Air pollutants have various effects on our local environment and human health. Vehicle and vessel air pollution contributes to a number of health issues and common diseases. It can increase a person's risk of cancer, impair the body's immune system and cause many respiratory problems. It is also commonly linked to asthma and is believed to be a contributor to birth defects. These air pollutants and their effects are described further.

3.2.1. Particulate Matter

Particulate matter (PM), as its name suggests, is composed of small particles of solid or liquid material that can have varying composition. Their size is distinguished by a subscript accompanying the acronym PM: so PM₁₀ would refer to all particulate matter with a diameter of 10 microns or smaller. Some particles are large or dark enough to be seen as soot or smoke, but fine particulate matter is tiny and is generally not visible to the naked eye.

A distinction can be made between exhaust PM and PM emitted from wear and tear. The non-exhaust PM is the result of tire wear, brake wear and road surface wear in road transport and from wear and tear from brakes, electrical lines and contact points in rail transport.

Health effects associated with ambient PM – which can be inhaled deep into the lungs – include premature death, aggravation of respiratory and cardiovascular disease. Diesel PM is of special concern because diesel exhaust has been associated with an increased risk of lung cancer⁸. Finally, PM is a cause of fouling of the environment, reduces visibility and is aesthetically undesirable.

3.2.2. Carbon Monoxide

Carbon monoxide is formed from the incomplete combustion of fuels. Motor vehicles are responsible for the emission of the majority of carbon monoxide (CO) emissions in cities. The concentrations of CO can rise during winter months when inversions can lead to its trapping in cities and enclosed geographies.

CO is most dangerous for people with heart disease, inhaling even a low concentration can lead to chest pains and difficulty in breathing; long term exposure can produce permanent cardiovascular damage. CO is also a precursor for the formation of smog. A properly functioning vehicle after-treatment tail-pipe unit, such as a catalytic converter will help reduce the amounts and concentrations of CO emitted from vehicles.

3.2.3. Nitrogen Oxides

Nitrogen oxides are produced from the combustion process in engines, power plants and other high temperature fossil fuel burning activities. They are acidic in nature and in the presence of water can form nitrous and nitric acids. NO_x, also a component of photo-chemical smog, is a constituent in the formation of ground level ozone and can cause acid rain. Inhalation of NO_x for even small periods of time (30 minutes) can lead to respiratory difficulties including the inflammation of airways and asthma. Prolonged exposure, such as staying on congested highways with poor airflow, has led to emergency room visits and

⁸ USEPA (2004) Final Regulatory Analysis: Control of Emissions from non-road Diesel Engines, Page 2-55: www.epa.gov/nonroad-diesel/2004fr/420r04007c.pdf

hospitalization.

3.2.4. Sulfur Oxides

Sulfur oxides (SO_x) come from the combustion of fossil fuels that contain sulfur. The sulfur in the fuel is oxidized during the combustion process. As a result SO and SO₂ is formed. Since the emitted SO is further oxidized in the atmosphere, mostly only SO₂ emission is reported. A small amount of sulfur is also emitted as particles.

Sulfur dioxides have respiratory impacts such as lung irritation, increased breathing rates, and suffocation. The most serious health effect is the aggravation of asthma and chronic bronchitis. Sulfur dioxides can also irritate the throat and eyes.

SO₂ contributes to the formation of acid rain, which may cause extensive damage to materials and terrestrial ecosystems, aquatic ecosystems, and human populations.

The levels of sulfur in diesel and gasoline are regulated worldwide, in particular for road transportation.

3.2.5. Lead

Lead is a metal that is found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Lead tetrachloride is an octane booster that has been used as a gasoline additive. The use of leaded gasoline in vehicles is the main way of the dispersion of lead in the human environment, being emitted as a particle from vehicle tailpipes. The addition of lead to gasoline also affects the operation of vehicles negatively. Lead can poison the rare earth metals in a catalytic converter and renders it useless; it also shortens the life of spark plugs and is responsible for the fouling of other engine components.

Lead is extremely detrimental to human health and to the neurological development in children. Once taken into the body either by ingesting food/drink contaminated by lead or breathing in the particles, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ.

3.2.6. Volatile Organic Compounds (VOCs)

Volatile organic compounds are a variety of chemicals, some of which may have short- and long-term adverse health effects. They typically occur in small quantities and concentrations and are emitted through vehicle and vessel exhaust systems. VOCs and HCs can have many different effects on human physiology; these can include: Eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system. An example is the low levels of the carcinogen formaldehyde that is emitted by natural gas vehicles.

3.2.7. Ground level Ozone

Ozone occurs naturally in the stratosphere approximately 10 km and 50 km above the earth's surface and forms a layer that protects life on earth from the sun's harmful rays. However, in

the earth's lower atmosphere, ground-level ozone is considered "bad" as it is an extremely strong oxidizing agent. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit NO_x and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma.

3.2.8. Other air emissions

The US Environmental Protection Agency EPA has listed 1,033 Hazardous Air Pollutants (HAPs)⁹ related to mobile source emissions and, of these, 644 are components of diesel exhaust, including benzene, cadmium, formaldehyde, and 1,3-butadiene. These contaminants found in the ambient air that are known or suspected to cause cancer, reproductive or birth defects, other health effects, or adverse environmental effects, but do not have established ambient air quality standards. HAPs may have short-term and/or long-term exposure effects.

3.2.9. Ozone-Depleting Substances

Ozone depleting substances (ODS) are those substances which deplete the ozone layer. In response to a steady decline of about 4 per cent per decade in the total amount of ozone in the earth's stratosphere since the late 1970s, and a much larger, but seasonal, decrease in stratospheric ozone over the earth's polar regions (an ozone hole) during the same period, the international community ratified the Vienna Convention for the Protection of the Ozone Layer 1985 and the Montreal Protocol on Substances that Deplete the Ozone Layer 1987 along with its amendments.¹⁰

The principal end uses of Ozone Depleting Substances in the transport sector are for refrigeration and air conditioning and as fire extinguishing agents. Refrigerated transport includes refrigerated holds in ships, truck trailers, railway freight wagons and other shipping containers.

Dichlorodifluoromethane (R12), a chlorofluorocarbon (CFC) also known as Freon-12¹¹, was used in most refrigeration and vehicle air conditioning applications prior to 1994. CFCs are not used anymore even for servicing in Mobile Air Conditioning systems, since 2010, in all countries in the world.

Today, about all new systems utilize Hydrofluorocarbons (HFC) refrigerants (mostly HFC-134a). HFC-134a, is a haloalkane refrigerant similar to R-12 but with less ozone depletion potential. The problem with HFC-134a is that it has a high global warming potential.

The required global phase-out of hydrochlorofluorocarbons (HCFCs) coupled with concerns to reduce global warming, drive transition from ozone depleting substance (ODS) refrigerants.

Refrigerants with a global warming potential (GWP) of more than 150 such as HFC-134a will be phased out in the European Union.

Up to now, car and truck manufacturers have evaluated several refrigerant options for new car and truck air conditioning systems including R-744, HFC-152a and HFC-1234yf. These

⁹ The full list of Compounds emitted by mobile sources is available at:
www.epa.gov/otaq/regs/toxics/420b06002.xls

¹⁰ Economic and Social Commission for Asia and the Pacific, "Major issues in transport, Committee on Transport", 29-31 October 2008, Bangkok

¹¹ Freon 12 is a brand name of DuPont

three options have GWPs below the EU threshold of 150 and can achieve fuel efficiency comparable to the existing HFC-134a systems with appropriate hardware and control development.

Non-fluorinated refrigerants have been commercialized to a small extent aboard marine vessels (R-717, R-744), and tested in marine containers, trailers (R-744) and trucks (HC-290).

Carbon dioxide (R-744) is one of a few promising solutions in transport refrigeration. While direct emissions of R-744 are negligible, indirect emissions of R-744 may be comparable to HFCs depending on the climate where the vehicle is operated. Aboard marine vessels, because operation under high ambient temperatures is commonly required, R-774 use has been limited to low temperature stages of cascade or indirect system applications. Due to safety concerns, use of ammonia (R-717) has been limited to indirect and cascade systems on larger ships which do not carry passengers but professional crew only.¹²

3.3 Environmental challenges per transport mode

Key environmental issues facing the freight industry today include the emissions of greenhouse gases, air and water pollution, the introduction of non-indigenous species, and noise. Diesel engines in heavy-duty trucks, locomotives, and commercial vessels are major producers of nitrogen oxides (NO_x).

The maximum amount of main air pollutants allowed in exhaust gases discharged from a diesel engine is regulated in most part of the world for cars, light and heavy duty vehicles and non road engines. Emission standards for combustion engines are also developed for locomotives, aircraft, ships and inland water vessels.

The duty to comply with these standards is on the engine manufacturer and equipment has to be emission certified before it is released to the market.

In order to meet the increasingly stringent requirements of the legislation, vehicle and engine manufacturers have continually improved engine technologies and have introduced various emission-control systems. As a result, modern engines have much lower emission levels for regulated pollutants than those of engines in vehicles/vessels entering service some years or decades ago.

Reduction of SO₂ emissions is primarily achieved by limiting the maximum sulfur content of diesel and other fuels used by mobile sources.

3.3.1. Maritime sector

Maritime shipping is one of the cleanest modes of freight transport in terms of CO₂ per ton km due to the economies of scale of large vessels. But ocean going ships are a large source of air pollution as a result of the use of bunker fuels with a high sulfur content and the relative older age of the total fleet and engines. In particular, SO₂ and PM emissions are influenced by the quantity of sulfur within the fuel. In the future, emission reductions are expected from waterborne transport, mainly as a result of improved fuel quality and engine technology.¹³ Other main challenges include pollution from bilge water and the dispersal of invasive organisms in ballast water.

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by

¹² UNEP Ozone Secretariat, "2010 Report of the Refrigeration, Air Conditioning and Heat Pumps Technical Option Committee: 2010 Assessment" February 2011, Nairobi.

¹³ European Environment Agency

ships from operational or accidental causes. It is a combination of two treaties adopted in 1973 and 1978 respectively and also includes the Protocol of 1997 (Annex VI). It has been updated by amendments through the years.

MARPOL Annex VI, limits the main air pollutants contained in ships exhaust gas, including sulfur oxides (SO_x) and nitrous oxides (NO_x), and prohibits deliberate emissions of ozone depleting substances. MARPOL Annex VI also regulates shipboard incineration, and the emissions of volatile organic compounds from tankers. Following entry into force of MARPOL Annex VI on 19 May 2005, the Marine Environment Protection Committee (MEPC), agreed to revise MARPOL Annex VI with the aim of significantly strengthening the emission limits in light of technological improvements and implementation experience. MEPC 58 (October 2008) adopted the revised MARPOL Annex VI and the associated NO_x Technical Code 2008, which entered into force on 1 July 2010.

The main changes to MARPOL Annex VI are a progressive reduction globally in emissions of SO_x, NO_x and particulate matter and the introduction of emission control areas (ECAs)¹⁴ to reduce emissions of those air pollutants further in designated sea areas.

| Maritime Transport | |
|---|--|
| Environmental Challenge | Legal basis |
| Greenhouse gases | No legal basis |
| Air pollutants SO ₂ The sulfur content of fuel influences the emissions of particulate matter (PM). | MARPOL 73/78 Annex VI Under the revised MARPOL Annex VI, the global sulfur cap is reduced initially to 3.50% (from the current 4.50%), effective from 1 January 2012; then progressively to 0.50 %, effective from 1 January 2020, subject to a feasibility review to be completed no later than 2018. The limits applicable in ECAs for SOX and particulate matter were reduced to 1.00%, beginning on 1 July 2010 (from the original 1.50%); being further reduced to 0.10 %, effective from 1 January 2015. |
| Air pollutants NO _x | MARPOL 73/78 Annex VI Three-tier structure for new engines Tier I - Ship keel lay-down after 1 January 2000 Tier II - Ship keel lay-down after 1 January 2011 Tier III - Ship keel lay-down after 1 January 2016 NOx standards for existing engines - Ship keel lay-down after 1 January 1990 but prior to 1 January 2000. |
| Soot, smoke and particulate matter | MARPOL 73/78 Annex VI for PM |
| Ship waste disposal Synthetic materials such as rigging, netting, plastic bags, etc. | MARPOL 73/78.- Annex V Annex V totally prohibits the disposal of plastics anywhere in the sea, and severely restricts |

¹⁴ As of October 2010 the ECA established to limit SOX and particulate matter emissions are the Baltic Sea area, the North Sea area, the North American area (expected to enter into effect 1 August 2012) and Puerto Rico and US Virgin Islands area (to be considered for adoption at MEPC 62).

| | |
|---|---|
| <p>Floating materials such as cork, foam, packaging, etc.</p> <p>Metal, paper/card, Stoneware, Glass, etc.</p> <p>Food remains</p> | <p>discharge of other garbage from ships into coastal waters. Stricter regulations exist for special maritime areas.</p> <p>EU Directive 2000/59/EC</p> |
| <p>Bilge Water Treatment</p> <p>Bilge water is a mixture of different substances including oil from various sources, paint particles and corrosion protection agents.</p> <p>Bilge water is pumped in a bilge water holding tank or directly into the sea through a bilge water de-oiling installation.</p> | <p>MARPOL 73/78, Annex I</p> |
| <p>Black Water</p> <p>Black Water is wastewater containing faecal matter and urine.</p> | <p>Annex IV of MARPOL 73/78 for black water</p> |
| <p>Ballast Water Treatment</p> <p>A ship fills up between 10 and 50% of its whole tonnage with ballast water and discharges it when the load is changed.</p> <p>Aquatic organisms (plants as well as animals) are dispersed as a result of the changing of ballast water and bring about changes to the marine flora and fauna.</p> | <p>International Convention for the Control and Management of Ships' Ballast Water and Sediments (not in force)</p> |
| <p>Underwater coatings</p> <p>Bio-fouling increased fuel consumption and has a negative impact on ship performance.</p> | <p>International Convention on the Control of Harmful Anti-fouling Systems on Ships, October 2001;</p> <p>EU Biocidal Products Directive 98/8/EC;</p> <p>EU REACH Regulation (EC) N° 1907/2006;</p> <p>EU CLP Regulation (EC) N° 1272/2008.</p> |
| <p>Ozone depleting substances</p> | <p>Annex IV of MARPOL 73/78</p> |
| <p>Decommissioning and ship recycling ¹⁵</p> | <p>Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009. (not in force)</p> |

3.3.2. Air cargo

Most aircraft carry both passengers and air cargo in the belly simultaneously. About 30% of air cargo is transported by freighters. Aircraft engines produce emissions that are similar to other emissions resulting from fossil fuel combustion.

A significant proportion of aircraft emissions are emitted at altitude. The "Special Report on

¹⁵ Other terms are ship dismantling (EU law, Basel Convention guidelines), ship recycling (IMO), ship scrapping (Environmental Protection Agency, EPA), and ship breaking (ILO).

Aviation and the Global Atmosphere”, prepared by the Intergovernmental Panel on Climate Change (IPCC) in 1999, was the first detailed assessment of the effects of aviation’s emissions on the atmosphere. Updated information was presented in the 2007 IPCC “Fourth Assessment Report.”

These reports explain that the full climate impact of air travel goes beyond the effect of CO₂ emissions alone. For example, aircraft emit nitrogen oxides (NO_x) which tend to increase the level of ozone and reduce the level of methane, both of which are greenhouse gases. Aircraft also contribute to water condensation in the atmosphere which has a warming effect. There is still considerable scientific uncertainty about the scale and dynamics of these effects. In addition, as noted in the Fourth Assessment Report, a metric that can be used to appropriately account for the effects of non-CO₂ emissions does not yet exist. Although reference to the Radiative Forcing Index (RFI) is often made, the Fourth Assessment Report specifically states that the RFI should not be used as an emission metric since it does not account for the different residence times of different forcing agents.

In its decision on how to consider the effect of non-CO₂ gases, the UN system organizations weighed up different factors, including scientific uncertainty, reputational risk, the need to follow the precautionary approach, the need for maintaining high environmental standards, and legal and budgetary considerations. A collective decision was taken, on a provisional basis and until further guidance is provided by the IPCC, to take into account only the effects of CO₂ from air travel. At the request of the UN Environment Management Group, ICAO and UNEP convened a meeting of experts on the subject of non-CO₂ emissions from aviation. Key considerations discussed during this meeting were that non-CO₂ effects and gases have different residence times in the atmosphere and are generally short lived relative to the CO₂ effects; and that the scientific understanding is continuing to mature on this subject. Working Group 1 for the IPCC Fifth Assessment Report is investigating methods to reduce the uncertainties noted above and an appropriate metric to account for the effects of other than CO₂ emissions from aviation.¹⁶

| | |
|---|--|
| Air cargo | |
| Environmental Challenge | Legal basis |
| Greenhouse gases | No legal basis ¹⁷ |
| Emissions of air pollutants including hydrocarbon (HC), carbon monoxide (CO), oxides of nitrogen (NO _x), sulfur dioxide (SO ₂), and particulates (PM ₁₀). | ICAO - Annex 16 – Environmental Protection, Volume II – Aircraft Engine Emissions to the Convention on International Civil Aviation. ¹⁸ |
| Noise | ICAO - ANNEX 16 to the Convention on International Civil Aviation Environmental Protection - Volumes I |
| Recycling | No legal basis |

¹⁶ Source: ICAO

¹⁷ ICAO’s Committee on Aviation Environmental Protection CAEP committed in February 2010 to a timetable for development of a CO₂ Standard for commercial aircraft that would establish the first global fuel-efficiency standard for any industry and is aiming to have it ready in 2013.

¹⁸ CAEP’s eighth meeting, held in February 2010, recommended standards for nitrogen oxides “up to 15% more stringent than the current levels, applicable to new aircraft engines certified after Dec. 31, 2013.” A cutoff of Dec. 31, 2012, was recommended for engines produced under existing NO_x standards.

3.3.3. Road freight transportation

Road freight transportation contributes to several environmental problems including emissions of greenhouse gases air, soil and water pollution, noise and the destruction of natural habitats.

A comprehensive overview of air emissions from road transport is available in the UNEP TNT Toolkit for Clean Fleet Strategy Development.¹⁹

Emissions from internal combustion engines are regulated according to standards in the European Union, the USA and some other countries. Many countries including Australia, China, India and Russia apply (part of the) European or/and US standards, often with different implementation dates.

The regulated diesel emissions include:

- Diesel particulate matter (PM),
- Nitrogen oxides (NO_x) composed of nitric oxide (NO) and nitrogen dioxide (NO₂).
- Hydrocarbons (HC), regulated either as total hydrocarbon emissions (THC) or as non-methane hydrocarbons (NMHC). One combined limit for HC + NO_x is sometimes used instead of two separate limits.
- Carbon monoxide (CO).

| Road Transport | |
|--|---|
| Environmental Challenge | Legal basis |
| Greenhouse gases | No legal basis for heavy duty trucks |
| Emissions of SO ₂ | SO _x fuel standards in most countries |
| Emissions of NO _x , PM and CO | Euro standards for heavy duty trucks US Tier Standards for heavy duty trucks Japan Emission Standards for Heavy Commercial Vehicles |
| Water pollution | n.a. |
| Noise | n.a. |
| Lead | The use of leaded fuel is forbidden in most countries |
| Recycling | n.a. |

In the European Union emissions from diesel engines used in vehicles of GVW over 3.5 tons were first regulated in 1988 with the introduction of the Euro 1 reduced emission limits, valid from 1992 to 1995.

Stricter standards were subsequently introduced from 1996 to 2000 (Euro II), from 2000 (Euro 3), from 2005 (Euro 4) and from 2008 (Euro V). The Euro V standards are requiring a reduction in NO_x of more than 70 % and a reduction in PM of more than 85 % compared with the Euro II standards. The Euro VI emission standards introduced in 2009 are comparable in

¹⁹ www.unep.org/tnt-unep/toolkit/index.html

stringency to the US 2010 standards, and will become effective from 2013 (new type approvals) and 2014 (all registrations).

Apart from the aforementioned Euro standards, the other main standards after which many national standards are modeled are the U.S. “Tier I and II” standards that are based on the Clean Air Act, a charter that strictly governs air quality in the U.S. The Tier standards have been gradually introduced. These emission standards can be found online at: www.dieselnet.com

The regulations on the levels of sulfur in fuels are constantly becoming more stringent and many new diesel vehicle engines require the use of low-sulfur diesel to operate consistently and for the manufacturers’ warranty to remain valid.

Fuel adulteration²⁰ continues to be a problem in many field operations. Additional detailed matrices and maps for gasoline and diesel characteristics for different continents can be found on: www.unep.org/pcfv/resources/fuels.asp

In most parts of the world, the use of leaded fuel is forbidden. However, in some developing and transitional countries, leaded fuel is still available. Reasons for still using leaded petrol vary, such as the operation of old refineries, and a lack of incentives, capital and/or awareness among fuel producers. Unleaded fuel was introduced in the US and in Japan in the 1970s; in the US, leaded fuel has been banned since 1986 and since 2000 in the European Union. More info on unleaded petrol can be found on: www.unep.org/pcfv

3.3.4. Inland navigation

Inland waterway transport offers an environment friendly alternative in terms of air emissions and noise and gas emissions due to its economies of scale and relative low speed. Its energy consumption per ton kilometer is approximately 17% of that of road transport and 50% of rail transport in Europe.²¹

The major air emissions from inland navigation are the result of the combustion of diesel fuel.

Particular problems in inland navigation are the emissions of SO₂ due to the much higher sulfur content of fuel used and the relative old age of the fleet and engines. This means that it will also take much longer in order to achieve compliance with new emission standards for new engines in some countries. Consequently, the superiority in the environmental performance of inland vessels compared with trucks has become smaller for SO₂, NO_x and PM.

The introduction of low-sulfur fuel for inland shipping and fuel quality regulations limiting the sulfur content of fuels will improve the SO₂ emissions from inland navigation. Lower sulfur fuels will allow the installation of new generation engines and after treatment equipment that should even further lower emissions of particulate matter from barges.

| | |
|------------------------------|--|
| Inland navigation | |
| Environmental Challenge | Legal basis |
| Greenhouse gases | No legal basis |
| Emissions of SO ₂ | Lower SO ₂ fuel standard for inland navigation in several countries |

²⁰ Fuel adulteration is the introduction of a foreign substance into motor spirit / high speed diesel, illegally or unauthorized with the result that the product does not conform to the requirements and specifications of the product.

²¹ http://ec.europa.eu/transport/inland/index_en.htm

| | |
|--|--|
| | Europe - Directive 2009/30/EC of the European parliament and of the council |
| Emissions of NO _x , PM and CO | US EPA standards for NO _x , PM and CO for inland water vessels CCNR II standard (Central Commission for Navigation on the Rhine) EU stage standards |
| Recycling | n.a. |

3.3.5. Rail transport

Rail is generally one of the cleanest modes of transport for most pollutants. GHG emissions from rail primarily originate from the combustion of diesel fuel by locomotives or in the case of electrically powered trains from the generation of electricity.

Specific NO_x and PM emissions of rail transport have decreased considerably in developed countries, mainly due to the trend towards electric powered trains in some parts of the world and newer engines.

| | |
|---|---|
| Rail transport | |
| Environmental Challenge | Legal basis |
| Greenhouse gases | No legal basis |
| Emissions of SO ₂ | Lower SO ₂ fuel standards in several countries |
| Emissions of NO _x and other air pollutants | US EPA standards for NO _x , HC, CO, PM and smoke for newly manufactured and remanufactured locomotives |
| Recycling | n.a. |

3.4 Environmental performance benchmarking

A growing number of freight transport companies are now monitoring the environmental performance of their own and outsourced transport activities but the freight transportation industry is still at an early stage in this process.

An increasing number of carbon footprint calculators is available on the internet for passengers and, more recently, for freight as well. The results produced by these calculators differ widely as a variety of different methodologies and emissions factors are used. This means that company specific emissions calculation tools and reporting cannot be used for benchmarking purposes.

Benchmarking is only possible to compare the environmental performance of different (multimodal) supply chains by using average default emission factors for each mode or when a common monitoring and reporting procedure is used by carriers to report carrier specific emission and logistics data.

Monitoring and reporting procedures and guidance have been developed in some countries and by organizations such as the Network for Transport and Environment, NTM²², a nonprofit

²² www.ntmcalc.org

organization in Sweden initiated in 1993, the BSR Clean Cargo Group²³ and more recently by a group of large freight transport companies in the framework of the World Economic Forum.²⁴ The European Committee for Standardization, CEN is also working on a common methodology for the calculation and declaration on energy consumption and greenhouse gas (GHG) emissions related to a transport service.²⁵

The available datasets with average emission factors vary in the extent to which they disaggregate emission factors and in the classifications they use. The mode offering the greatest degree of disaggregation by vehicle type is road.²⁶

Efforts have been made internationally to standardize the measurement and reporting of transport emissions in order to ensure comparability. At present there is no global single agreed standard on how emissions from freight transport should be measured but there are several national and global initiatives to harmonize transport emissions monitoring and reporting and to provide emission performance data per carrier, fleet and transport performance.

3.4.1. US EPA SmartWay

The US Environmental Protection Agency (EPA) launched SmartWay in 2004 as an innovative brand that represents environmentally cleaner, more fuel-efficient transportation options.

Through SmartWay, the EPA promotes the adoption of advanced fuel-saving technologies and operational practices that reduce CO₂, NO_x and PM. In a span of five years, SmartWay has grown to more than 2,600 partners, representing a diverse group of the US' largest freight shippers, carriers and logistics providers. Companies that join the SmartWay Transport Partnership submit key freight performance and logistics data to EPA for scoring and benchmarking, while committing to annual efficiency improvements.²⁷

SmartWay has developed monitoring and reporting tools and a central database for the reporting and evaluation of the environmental performance of carriers and shippers. This approach guarantees a common reporting methodology and a fair evaluation of the environmental performance of each company at fleet level. It also guarantees the confidentiality of specific data that is considered as commercially sensitive by carriers and shippers.

3.4.2. Environmental Ship Index

The Environmental Ship Index (ESI)²⁸ is a recent initiative of the World Port Climate Initiative. The ESI identifies seagoing ships that perform better in reducing air emissions than required by the current emission standards of the International Maritime Organization.

The ESI evaluates the amount of nitrogen oxide (NO_x) and sulfur oxide (SO_x) that is released by a ship and includes a reporting scheme on the greenhouse gas emission of the ship. The ESI is an indication of the environmental performance of ocean going vessels and will assist in identifying cleaner ships in a general way.

The ESI is comparing actual performance of a ship with a set baseline based on the IMO

²³ www.bsr.org/en/our-work/working-groups/clean-cargo

²⁴ www.weforum.org

²⁵ www.enquetes-publiques.afnor.org

²⁶ Alan McKinnon and Maja Piecyk, Measuring and Managing CO₂ Emissions of European Chemical Transport, CEFIC, 2010

²⁷ www.epa.gov/smartway/index.htm

²⁸ <http://esi.wpci.nl/Public/Home>

regulations in force and on EU regulations for fuels used at berth.

The overall ESI formula is based upon differentiated weighting for NO_x, SO_x and CO₂ and ranges from 0 for a ship that meets the environmental performance regulations in force to 100 for a ship that emits no SO_x and no NO_x and reports or monitors its energy efficiency.

Shipping companies have to report their actual performance and add the following documentation:

- For the calculation of NO_x emissions levels, the Engine International Air Pollution Prevention, EIAPP certificates of the engines on board a ship are used;
- Bunker information and delivery notes are used to calculate the SO_x score.

CO₂ emissions are not reflected in the index directly but the ESI rewards ships that report on energy efficiency.

3.4.3. Clean Shipping Index

The Clean Shipping index²⁹ is a tool for shippers to benchmark the environmental performance of shipping companies. The information is based on a “ship to ship” basis but the scoring is added to a total carrier score.

It covers CO₂, NO_x, SO₂ and PM, chemical products and water and waste control.

The Clean Shipping Project is financed by public funding from several local authorities in Sweden, the City and Port of Gothenburg and the European Union through their Structural Funds.

3.4.4. Shipping Efficiency Org

ShippingEfficiency.org is an initiative launched by the Carbon War Room and industry partners to increase information flows around international shipping's energy efficiency. Shippingefficiency.org has developed a labeling systems and gives information on the carbon efficiency of around 60 000 Ships. The rating uses a methodology developed by the International Maritime Organization (IMO) for the Energy Efficiency Design Index (EEDI) and data from the world's largest ship registries, IHS Fairplay. In addition, the website hosts a searchable tool for benchmarking ocean container vessels CO₂ efficiency against other vessels per major container route based on the BSR Clean Cargo Working Group's³⁰ methodology for benchmarking ocean container vessels.

²⁹ www.cleanshippingproject.se

³⁰ www.bsr.org/en/our-work/working-groups/clean-cargo

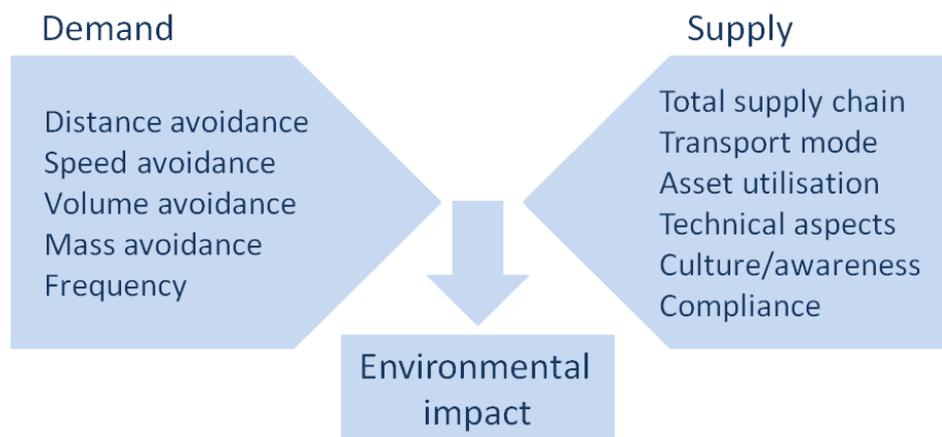
4. How to reduce the environmental impact of freight transportation

To identify opportunities for improvement a distinction can be made between major groups of factors: starting with factors influencing transport demand side; emissions reduction technologies and opportunities to save energy needed to transport a certain amount of cargo over a certain distance at a certain speed.

The strategy of UNEP³¹ in the area of transport is to Avoid - Shift - Clean. This three-way strategy is also valid for freight transportation and for the procurement of freight transportation services.

The environmental impact of freight transportation is a combination of demand and supply of freight transportations services. In the pre-procurement phase an analysis should take place to investigate the opportunities to avoid or minimize the need for transport.

A starting point for each transport service provider is the development of an Environmental Management System.



4.1 Environmental Management System

An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. Organizations with an EMS report being able to more effectively manage their environmental obligations. Additionally, organizations report enhanced ability to analyze, control and reduce environmental impacts, and to operate with greater efficiency and control.

There are several EMS schemes to which organizations can aspire. The most commonly used framework for an EMS is the one developed by the International Organization for Standardization (ISO) for the ISO 14001 standard. Established in 1996, this framework is the official international standard for an EMS.³²

The ISO 14000 series of standards were developed to provide companies with internationally recognized standards for establishing, maintaining and auditing effective environmental

³¹ Through its transport program, UNEP works with developing and transitional countries to enable a shift to a more mobile world and lower emissions from the transport sector - a less auto-dependant society that uses clean and cost-effective technology optimally. www.unep.org/transport/index.asp

³² Public Entity EMS Resource Center, www.peercenter.net

management systems (EMS).

Many of the opportunities for emission reduction opportunities can be identified through an effective Environmental Management System. It can be combined with other quality management programs, such as health, safety, security and risk management.

4.2 Freight transport avoidance

Freight transportation can be avoided by reducing weight and volume of products, limiting distance, speed, frequency and the number of handling links in a supply chain.

Examples of transport avoidance are:

- Reduction of volume and/or weight in the design phase of a product;
- Reduction of the volume and/or weight of packaging;
- The relocation of production and assembly processes closer to the place of consumption;
- Reduction of distances by better visibility as regards availability of the nearest stock (e.g. network management of empty crates, pallets, containers, etc);
- Virtual auctions avoiding the movement of people and products to and from a physical meeting place;
- The concentration of products by extracting some components (e.g. fruit juices);
- Electronic data exchange instead of the movement of physical information carriers (e.g. internet newspapers);
- Avoidance of emergency shipments, and
- Reduction of waste and return flows.

4.2.1. Distance avoidance

The total distances of freight flows can be reduced by measures such as local sourcing, better routing of freight flows and product swaps.

4.2.2. Speed avoidance

Speed has a large impact on the carbon intensity of freight transportation. The higher the speed the more energy is needed. Slower transport modes are in general less energy intensive and speed reduction to an optimal speed level within modes will reduce energy per vehicle or vessel km.

Although speed can be a crucial factor it is often possible to reduce the need for speed. Reducing the need for speed can create the opportunity to improve the energy efficiency within a mode or to shift to a more environmental friendly transportation mode or multimodal supply chain.

4.2.3. Handling factor

The transport intensity of a supply chain can be reduced by cutting the number of separate journeys that a product makes in travelling from the original source to the final point of destination (and return flows). Some additional handling is nonetheless the result of other measures to increase the supply chain efficiency and to reduce the impact of freight transportation on the environment. The consolidation of transport flows to increase load factors, intermodal transport or the development of reverse logistics channels instead of waste being transported to local landfill sites will add extra handling and transport but will often improve the environmental performance of products flows.

4.2.4. Product volume and weight reduction

Removing air or water from products are examples of measures that can be taken to reduce the volume or weight of a product before it is transported.

4.2.5. Packaging

Packaging represents one of the greatest challenges to environmental friendly logistics while at the same time being vital in shipping and storage.

Good packaging facilitates the optimal transport, handling and storage of goods. It can reduce volume and limits product damages and losses. On the other hand reducing packaging can reduce the exploitation of non-renewable raw materials. A life cycle analysis is needed to compare the impact of different disposal (compost and landfill) or reuse (recycle, return and secondary use) options.³³

4.3 Collaboration

The impetus for the development of supply chain management was the awareness that local optimizations often resulted in a suboptimal total supply chain performance. The same is true for environmental performance improvements in supply chains. Collaboration with other partners in the supply chains is therefore an important success factor in mitigating greenhouse gas emissions of freight transport.

Better collaboration and coordination between different UN organizations result in higher levels of transport asset utilization and cut emissions per ton-km. Collaborative transportation management improves load factors and reduce empty miles.

The Logistics Cluster³⁴ approach to support the humanitarian community is a good example of horizontal collaboration. Endorsed by the Inter-Agency Standing Committee (IASC)³⁵ in 2005, it is an inter-agency forum for coordination, policy development and decision-making involving the key UN and non-UN humanitarian partners. The IASC designated global cluster leads such as the World Food Programme (WFP) to facilitate these joint ventures, both at global and field level to ensure system-wide preparedness and technical capacity to respond to humanitarian emergencies.

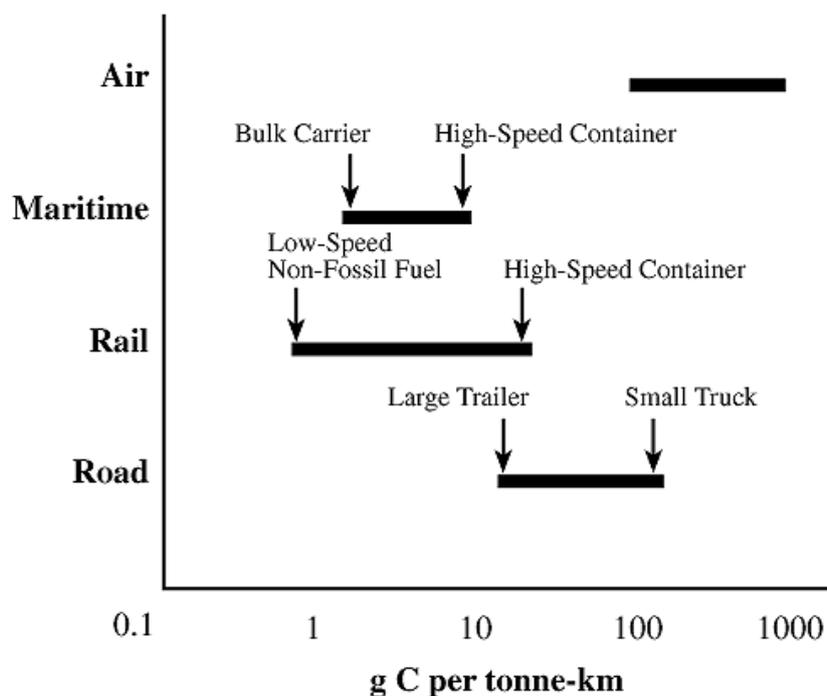
4.4 Modal shift

Freight modes have very different environmental profiles. On a ton-mile basis, maritime and freight rail are the lowest emissions modes. These freight modes specialize in carrying bulk or containerized goods in large quantities, at relatively slow speeds, and achieve significant economies of scale.

³³ <http://log.logcluster.org/operational-environment/green-logistics/index.html>

³⁴ <http://log.logcluster.org/operational-environment/logistics-cluster/index.html>

³⁵ The IASC was established in June 1992 in response to United Nations General Assembly Resolution 46/182 on the strengthening of humanitarian assistance.



Source: CO2 intensity of freight (Whitelegg, 1993; IPCC, 1996a; OECD, 1997a).³⁶

Trucking generates significantly higher GHG emissions per ton-km reflecting the relative low capacity per trucks travelling at relative higher speeds. Aircraft, which primarily carry high-value, time-sensitive cargo, have by far the highest GHG emissions per ton of freight.

A tool that can be used to compare the emission footprint of different (multimodal) supply chains is EcoTransIT³⁷, an easy to use web based software tool for assessing the environmental impact of transporting freight by various transport modes worldwide. EcoTransIT was initiated by a number of European railway companies in 2000.

Different modes are often compared on the average emissions per ton-mile of each mode. However, in specific market segments and for the whole transport chain from origin to destination, differences in environmental impact between modes can be very different from these average values. This is why comparison of modes based on average load factors and average environmental performances, often leads to misleading conclusions. A comparison of the environmental performance of transport modes only makes sense when the whole transport chain is considered.³⁸ Because of variability within a mode, and the interactions between modes, mode selection choices made on modal average environmental performance information could lead to incorrect mode choice decisions. While conventional wisdom holds that rail is more efficient than truck, this varies by rail and road trip length, amount of road transport to and from rail heads, and the efficiency of the rail company and the truck company being compared. At decision points where variability overlaps average modal emission factors, a mode choice decision will be ambiguous.³⁹

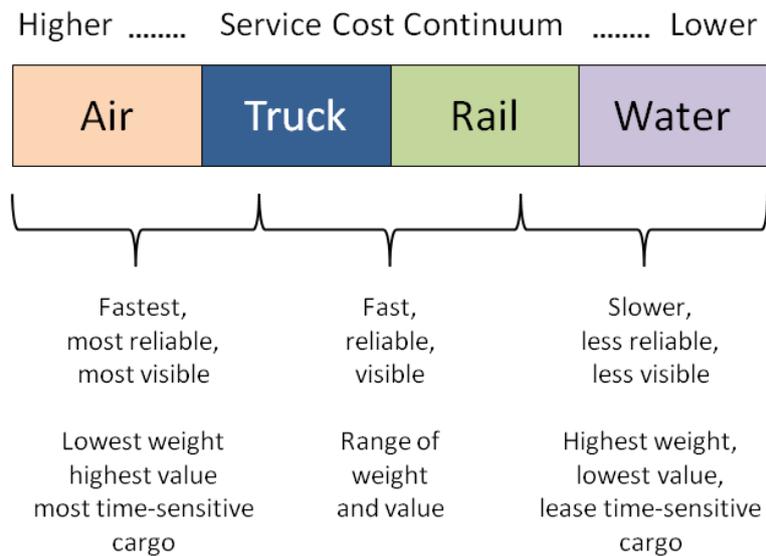
It is also obvious that for many freight shipments it is impossible to switch modes and that each mode has its specific characteristics in terms of cost, speed, and reliability.

³⁶ Source: Aviation and the Global Atmosphere, IPCC

³⁷ The key parameters and methods of EcoTransIT were controlled in 2008 by the European Environment Agency. www.ecotransit.org

³⁸ To shift or not to shift that's the question, CE Delft, 2003

³⁹ US EPA SmartWay



Transport service cost continuum – source: US Federal Highway Administration

The figure above shows the major characteristics of each of the freight modes in a continuum/spectrum and shows how this relates to the types of goods that may be shipped by each mode. The rail and water modes have the highest capacity on this spectrum, while air and truck have the lowest capacity. The air and truck modes provide the highest level of service in terms of reliability and minimal loss and damage⁴⁰

4.5 Intermodal transport

Intermodal freight transportation involves the use of two or more modes of transportation in a closely linked network for the seamless movement of goods. Intermodal freight transportation can offer cost and environmental advantages compared to a traditional mainly one mode approach. The attention for intermodal freight transport strongly increased over the last years as well as initiatives to improve data transfer and common intermodal equipment such as containers. While the combination of road transport with another mode is an obvious one the combination of sea and air transport or road and air transport is more recent and can result in more environmental and cost efficient supply chains.

4.6 Operational improvements

Improving the productivity of operational processes leads mainly to greater energy efficiency and therefore to carbon savings as well. Logistics and freight transport operational improvements have been used by companies for a long time to improve their financial performance. Until recently these improvements were evaluated in terms of cost reduction and service reliability and not in terms of environmental impact.

Integrating environmental impact assessment into operational decision making and improvement projects is needed to better understand the relationship between cost, service and environment. Since this is often a win-win scenario, it will create an opportunity for companies to accelerate the improvement of the total performance of their freight transport operations. Operational and efficiency improvements that reduce adverse environmental impacts while delivering quantifiable economic benefits should be included throughout the tendering process as well as in the contract performance phase.

⁴⁰ Quick Response Freight Manual II, 2007, US Federal Highway Administration

Areas of improvement are listed below. Depending on their span of control, these solutions can be implemented by freight forwarders, logistics services providers and carriers.

4.6.1. Supply chain

- Supply chain integration
- Supply chain consolidation
- Collaborative logistics networks
- Intermodal transport and modal shift
- Expanding storage capacity to increase full load transports
- Corridor specific coordination

4.6.2. Road

- Collaborative transport networks
- Transport pooling
- Better transport planning
- Reduced empty mileage
- Reduced highway speeds
- Reduced overnight idling
- Reduced pickup/drop off idling,

4.6.3. Rail

- Reduced line haul speeds
- Reduced empty mileage
- Reduced switchyard idling
- Better traffic management systems
- Cross-border coordination
- Enhanced interoperability
- Double stack
- Longer trains

4.6.4. Maritime transport

- Minimizing the use of diesel powered auxiliary engines while in port by the use of shore-to-ship electric power
- Reduced vessel speeds
- Use of larger ships
- Alternative fuels (LNG, ultra low sulfur diesel, electricity, etc.)
- Hull and propeller cleaning in dry docks

4.6.5. Air cargo

- Use of continuous descent approach ⁴¹
- Increased load factors

⁴¹ For more information on Continuous Descent Approach see ICAO documents “Doc 9931 - Continuous Descent Operations (CDO) Manual” and “Cir 303 AN/176 - Operational Opportunities to Minimize Fuel Use and Reduce Emissions”

- Reduced use of auxiliary power units
- Reduced use of reverse thrust
- Taxiing with fewer engines running
- Clean aircraft
- Polishing aircraft

4.7 Clean transport technology

Transport will remain largely oil dependent in the coming decennia. It will take time before innovative technologies such as hydrogen or electric powered vehicles will become available at an acceptable cost. The effect of these energy carriers on global climate change will depend on the degree that renewable primary energy sources will become available and on the degree that energy losses in the total energy conversion chain can be reduced.

New cleaner technologies have been developed over the past decades but the impact on the environmental performance of carriers depends on the market take-up of these technologies.

Several national or regional authorities verify the emission reductions that can be achieved using a particular transport technology, after treatment technologies, use of cleaner fuels and emission reducing fuel additives etc.

Examples of Environmental Technology Verification programs for transport technologies are the US EPA and CARP in the USA. Some of these organizations publish Verified Technology Lists describing the emission reduction capabilities and other related information.⁴²

Retrofits and repowering are often cost efficient options that can be implemented by carriers to improve the environmental performance of their existing fleet.

4.7.1. Retrofit

A retrofit means the addition of an after-treatment device such as Diesel Particulate filters, NO_x catalysts to remove emission from the engine exhaust.

Diesel Oxidation Catalysts are exhaust after treatment devices that reduce emissions from diesel fueled vehicles and equipment.⁴³

Diesel Particulate Filters (DPFs) are exhaust after treatment devices that significantly reduce emissions from diesel fueled vehicles and equipment. DPFs typically use a porous ceramic or cordierite substrate or metallic filter, to physically trap Particulate Matter and remove it from the exhaust stream.

4.7.2. Repower

Repowering refers to the replacing of an existing engine with a new engine in particular for vehicles and vessels with a useful life longer than that of the engine. Selectively replacing older diesel equipment can sometimes be the most cost-effective way to reduce the emissions of a fleet.

Older diesel vehicles or machines can be repowered with newer diesel engines or in some cases with engines that operate on alternative fuels (e.g. CNG, LNG, electric). Significant emission reductions can be achieved, depending on the newer engine and the vehicle or machine's ability to accept a more modern engine and emission control system. Fleet owners often also benefit from improved fuel economy and performance, as well as lower

⁴² www.epa.gov/smartway/transport/partner-resources/resources-technology-research.htm

⁴³ Source US EPA Clean Diesel Campaign, 2010

maintenance costs.

4.8 Alternative fuels

Diesel fuel quality range from bunker fuel that powers most ships, to lower quality grades for off-road vehicles, to more recent ultra low sulfur diesel for on-road trucks.

A variety of alternative fuels can be used in diesel engines. Some require little or no modifications to the engine (such as some biodiesel blends) while others (such as natural gas) require engine conversion or replacement.

Alternative energy carriers⁴⁴ for transport are:

- LNG (Liquefied Natural Gas);
- LPG (Liquefied Petroleum Gas);
- CNG (Compressed Natural Gas);
- CBG (Compressed biogas);
- Ethanol;
- Bio diesel;
- Synthetic fuels (Fischer Tropsch, DME Di-methyl ether, Methanol);
- Ethers (MTBE and ETBE);
- Hydrogen; and
- Electricity.

The production scale and the chosen energy conversion pathway have large effects and can determine whether or not alternative fuels have a better environmental performance than diesel.⁴⁵

Biodiesel blends can vary between low blends as the 5 % renewable fuels in fuels in Europe and B20 or B50 (respective 20 percent and 50 percent biodiesel). Biodiesel is made from oil-rich seeds, such as rapeseed, sunflower, soya, palm, coconut and jatropha or from animal fats and recycled restaurant greases.

There is still a wide range of uncertainty in the estimation of life cycle energy and greenhouse gas emission balances for biofuels. Almost all biofuels today are produced on fertile land that competes with other agricultural production. A large source of uncertainty arises in estimating emissions of nitrous oxides (N₂O) from cultivated soil and indirectly from fertilizer application and emissions of soil greenhouse gases from converting forests or grasslands to agriculture for the purpose of producing biofuel crops.⁴⁶

Second generation biodiesel derived from food waste and forest products grown on land unsuited to agricultural production, may overcome these problems.

4.9 Better maintenance

Proper engine maintenance is necessary for best engine performance, optimum fuel economy, extended engine life and to control emissions. Overall operating costs can also be reduced with regular vehicle and engine maintenance. A properly maintained engine is necessary for retrofit technologies to effectively reduce emissions, maintain durability, and have reduced maintenance requirements.

⁴⁴ A difference can be made between energy sources such as petrol or wind and energy carriers such as diesel or electricity

⁴⁵ Well-to-wheels analysis of future automotive fuels and powertrains in the European context, European Commission, 2008

⁴⁶ OECD ITF (2008) Biofuels: Linking Support to Performance, Discussion paper No. 2008 - 7

4.10 Eco-driving and anti idling measures

Eco-driving has a large impact on the fuel consumption of a vehicle.

Additional benefits of eco-driving are emissions reductions, less wear and tear on the vehicle and reducing the risk of accidents.

Education and training are needed to achieve fuel efficiency and safe driving, companies need to take further action if they are to sustain the early savings gained from eco-driving training.

Behavioral change is also needed to reduce truck and locomotive engine idling. Idling occurs when an engine is on, but the vehicle is not moving. Truck drivers idle their engines mostly for heating or air conditioning, to operate on-board electrical appliances, or to ensure the engine block, fuel and oil remain warm in cold weather. Running engines while at rest or waiting can represent more than 10% of a truck's annual fuel consumption. There is a range of technologies to reduce idling, both through on-board systems and off-board systems but behavioral change is also an important factor to reduce idling.

5. Key Social Considerations

The social dimension of sustainable procurement operations aims at ensuring that competition among bidders does not exert a downward pressure on the working conditions of the workers employed or, even worse, leads to practices such as the use of child labor or forced labour, discriminatory practices or denial of freedom of association and the right to collective bargaining.

International labor standards adopted by the International Labour Organization (ILO) have an essential role to play in this respect as they provide clear rules on the “do’s” and “don’ts” for bidders and buyers. As will be explained below, a number of other international instruments also provide valuable guidelines on this matter.

5.1 International labour standards

The International Labour Conference, which comprises tripartite delegations (from governments, employers and workers) of all ILO Member States, meets annually and adopts two types of international labour standards: Conventions, which are binding for Member States that ratify them, and Recommendations that often complete the Conventions and provide additional guidance. They are globally designated as international labour standards, which are the legal component of the ILO’s strategy for governing globalization, promoting sustainable development, eradicating poverty, and ensuring that women and men worldwide enjoy decent work. Today, international labour standards have grown into a comprehensive system of instruments concerning work and social policy and cover a broad range of subjects, from working conditions to employment policy, and from occupational safety and health to social security to take only a few examples. They are backed by a supervisory system designed to address all sorts of problems in their application at the national level.

Mention will be made here only of a Convention and a Recommendation that deal explicitly with the social dimension of public procurement, and of the eight so-called core ILO Conventions, covering the four categories of fundamental principles and rights at work to which extensive reference is made in other instruments such as the Global Compact or codes of conduct.⁴⁷

5.1.1. Labour clauses in public contracts

The Labour Clauses (Public Contracts) Convention (No. 94) and Recommendation (No. 84), 1949 respond specifically to the concerns around the potentially negative social impact of public procurement operations.⁴⁸ Convention No. 94 is about good governance, it addresses socially responsible public procurement by requiring bidders/contractors to align themselves with the locally established prevailing pay and other working conditions as determined by law or collective bargaining. Its aim is to remove wages and working conditions from the price competition necessarily involved in public tendering.

Convention No. 94 requires bidders to be informed in advance, by means of standard labour

⁴⁷ Additional information on international labour standards may be found at: www.ilo.org/global/standards/lang-en/index.htm. The full text of all ILO Conventions and Recommendations, as well as their status of ratification, can be found at: www.ilo.org/ilolex/english/index.htm.

⁴⁸ For detailed information on the content of Convention No. 94 and Recommendation No. 84, as well as on national legislation and practice and the current trends in this area, see the General Survey on Labour clauses in public contracts prepared by the ILO Committee of Experts on Conventions and Recommendations, ILC, 97th session, Geneva, 2008, available at www.ilo.org/ilc/ILCSessions/97thSession/reports/lang-en/docName--WCMS_091400/index.htm. In addition, the International Labour Office has published a practical guide on Convention No. 94, available at: www.ilo.org/wcmsp5/groups/public/@ed_norm/@normes/documents/publication/wcms_099699.pdf.

clauses included in tender documents, that, if selected, they would have to observe in the performance of the contract wages and other labour conditions not less favorable than the highest minimum standards established locally by law, arbitration or collective bargaining. The same rules apply to their subcontractors as well as to assignees of the public procurement contract. Bidders should prepare their offers accordingly.

The Convention proposes a common level playing field – in terms of labour standards – for all economic actors, and thus promotes fair competition and socially responsible procurement. Most importantly, the Convention enables contracting authorities to evaluate bids based on objective criteria, such as the efficiency of production methods, the quality of materials, or long-term benefits including technology transfer, which ultimately leads to cost-effective public procurement operations and contributes to sound economic development.

Convention No. 94 provides for two specific types of measures in cases where the labour clauses are not fully respected (without prejudice to other available remedies such as judicial proceedings): first, contracting authorities must take measures, such as the withholding of payment due under the contract, so that the workers concerned can receive the wages to which they are entitled; second, contracting authorities must provide for adequate sanctions, such as the withholding of contracts.

5.1.2. Conventions on fundamental rights at work

The ILO Conference has also adopted eight core Conventions, almost universally ratified, on freedom of association, forced labour, equality in employment, and the elimination of child labour. A brief summary is presented below.⁴⁹ One of the major challenges is to monitor the implementation of these Conventions at each level of the global supply chain, including in the context of public procurement operations.

Freedom of association and collective bargaining

The *Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)* provides that workers and employers must have the right to establish and join organizations of their own choosing without previous authorization. Their respective organizations must be free to organize themselves and their activities without undue interference from the public authorities. They must also have the right to establish and join federations and confederations, which themselves must be free to affiliate with international organizations of workers and employers.

The *Right to Organize and Collective Bargaining Convention, 1949 (No. 98)* provides that workers must enjoy adequate protection against acts of anti-union discrimination, including requirements that a worker not join a union or relinquish trade union membership for employment, or dismissal of a worker because of union membership or participation in union activities. Workers' and employers' organizations must also enjoy adequate protection against any acts of interference by each other. Finally, measures appropriate to national conditions must be taken, where necessary, to encourage and promote collective bargaining.⁵⁰

Forced labour

The *Forced Labour Convention, 1930 (No. 29)* prohibits the use of forced or compulsory

⁴⁹ For a more detailed presentation, see ILO, *Fundamental rights at work and international labour standards*, Geneva, 2003.

⁵⁰ To date, Convention Nos. 87 and 98 have been ratified by 150 and 160 States respectively. For more information, see the General Survey on freedom of association and collective bargaining, ILC, 81st session, 1994 : [www.ilo.org/public/libdoc/ilo/P/09661/09661\(1994-81-4B\).pdf](http://www.ilo.org/public/libdoc/ilo/P/09661/09661(1994-81-4B).pdf). See also the Digest of decisions and principles of the Committee on Freedom of Association, 5th (revised) edition, 2006: www.ilo.org/wcmsp5/groups/public/@ed_norm/@normes/documents/publication/wcms_090632.pdf.

labour in all its forms, defined as “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.”

The *Abolition of Forced Labour Convention, 1957 (No. 105)* prohibits forced or compulsory labour as a means of political coercion or education or as a punishment for holding or expressing political views or views ideologically opposed to the established political, social or economic system; as a method of mobilizing and using labour for purposes of economic development; as a means of labour discipline; as a punishment for having participated in strikes; and as a means of racial, social, national or religious discrimination.⁵¹

Equality in employment

The *Equal Remuneration Convention, 1951 (No. 100)* requires Member States that ratify it to promote the application to all workers of the principle of equal remuneration for men and women workers for work of equal value, and to ensure its application where the State is involved in wage fixing. The *Equal Remuneration Recommendation, 1951 (No. 90)*, which complements Convention No. 100, makes express reference to the desirability of ensuring application of the principle of equal remuneration for men and women workers for work of equal value for work executed under the terms of public contracts.

The *Discrimination (Employment and Occupation) Convention, 1958 (No. 111)* requires ratifying States to declare and pursue a national policy designed to promote, by methods appropriate to national conditions and practice, equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination in these fields. Discrimination is defined as any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation. The *Discrimination (Employment and Occupation) Recommendation, 1958 (No. 111)*, which complements Convention No. 111, provides that eligibility for contracts involving the expenditure of public funds should be made dependent on observance of the principles of non-discrimination.⁵²

Child labour

The *Minimum Age Convention, 1973 (No. 138)* provides that the general minimum age for admission to work or employment must not be less than the age of completion of compulsory schooling and, in any case, must not be less than 15 years. Where the economy and educational facilities are insufficiently developed, the minimum age can be initially set at 14 years. The minimum age for hazardous work is set at 18 (16 under certain strict conditions). For light work, the minimum age is 13 years (12 years if the general minimum age is set at 14 years).

The *Worst Forms of Child Labour Convention, 1999 (No. 182)* requires ratifying States to take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour as a matter of urgency. “Child” is defined as a person under 18 years of age. The worst forms of child labour include all forms of slavery or practices similar to slavery (such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict); child prostitution and pornography; using children for illicit activities, in particular for the production and trafficking of drugs; and work which is likely to harm the health, safety or

⁵¹ To date, Convention Nos. 29 and 105 are ratified by 174 and 169 States respectively. For more information on the application of these Conventions, see the General Survey on forced labour, ILC, 96th session, 2007: www.ilo.org/wcmsp5/groups/public/@ed_norm/@relconf/documents/meetingdocument/wcms_089199.pdf. See also ILO, *Combating forced labour: a handbook for employers and business*, 2008, available at: www.ilo.org/sapfl/Informationresources/ILOPublications/lang--en/docName--WCMS_101171/index.htm.

⁵² To date, Conventions Nos. 100 and 111 have been ratified by 168 and 169 States respectively.

morals of children.⁵³

5.1.3. Other relevant ILO instruments

The *ILO Declaration on Fundamental Principles and Rights at Work*⁵⁴, adopted in 1998, proclaims that all Member States, even if they have not ratified the eight core Conventions mentioned above, have an obligation arising from the very fact of membership in the Organization to respect, to promote and to realize, in good faith, the principles concerning the four corresponding categories of fundamental rights, namely:

- freedom of association and the effective recognition of the right to collective bargaining;
- the elimination of all forms of forced or compulsory labour;
- the effective abolition of child labour; and
- the elimination of discrimination in respect of employment and occupation.

The Declaration makes it clear that these rights are universal and must be respected in all States, regardless of their level of economic development. It stresses however that labour standards should not be used for protectionist trade purposes.

The *ILO Tripartite Declaration of principles concerning multinational enterprises and social policy*⁵⁵, adopted in 1977 and last amended in 2006, recognizes that multinational enterprises play an important part in the economies of most countries and in international economic relations. Its aim is to encourage the positive contribution which multinational enterprises can make to economic and social progress and to minimize and resolve the difficulties to which their various operations may give rise. The Declaration sets out principles in the fields of employment, training, conditions of work and life and industrial relations which governments of host and home countries, employers' and workers' organizations and multinational enterprises are recommended to observe on a voluntary basis. Its provisions do not affect obligations arising out of ratification of ILO Conventions. It provides inter alia that all parties concerned should contribute to the realization of the ILO Declaration on Fundamental Principles and Rights and Work of 1998.

5.2 Other international instruments

5.2.1. UN Global Compact

The UN Global Compact⁵⁶ is an initiative launched in 1999 by the Secretary-General of the United Nations during the World Economic Forum meeting at Davos. It is both a policy platform and a practical framework offered to businesses for the development, implementation, and disclosure of sustainability policies and practices around 10 principles in the areas of human rights, labour, environment and anti-corruption. It is not a regulatory instrument but rather a voluntary initiative to which companies around the world are invited to participate through a formal commitment to support the Global Compact and its principles. The four principles related to labour issues are derived from the ILO Declaration on

⁵³ To date, Conventions Nos. 138 and 182 have been ratified by 157 and 173 States respectively.

⁵⁴ For additional information on the 1998 Declaration, including its full text, see www.ilo.org/declaration/lang-en/index.htm.

⁵⁵ The text of the 1977 Declaration is available at: www.ilo.org/empent/Whatwedo/Publications/lang-en/docName--WCMS_094386/index.htm.

In addition, the ILO has established a Helpdesk for Business that provides free and confidential assistance service and is available for company managers and workers, as well as government agencies, employers' and workers' organizations and other interested organizations. The Helpdesk can be contacted at :

www.ilo.org/empent/Areasofwork/business-helpdesk/lang-en/index.htm.

⁵⁶ www.unglobalcompact.org/

Fundamental Principles and Rights and Work of 1998.

The Global Compact asks companies to embrace, support and enact, within their sphere of influence, a set of core values in the areas of human rights, labour standards, environment, and anti-corruption. Businesses must respect (even if it is not a regulatory instrument) the following 10 principles:

- Support and respect the protection of internationally proclaimed human rights;
- Ensure that they are not accomplices in human rights abuses;
- Protect the freedom of association and the effective recognition of the right to collective bargaining;
- Elimination of all forms of forced and compulsory labour;
- Abolition of child labour;
- Discrimination-free employment and occupation;
- Support a precautionary approach to environmental challenges;
- Undertake initiatives to promote environmental responsibility;
- Encourage the development and diffusion of environmentally friendly technologies;
- Fight against corruption in all its forms, including extortion and bribery.

Global Compact membership is still limited among UN suppliers in developing countries, with the large majority of orders from the UN placed with Global Compact members located in developed countries and especially in Europe. UN procurement from Global Compact members as a percentage of orders of USD 30,000 or more increased from 12.32 % in 2006 to 14.15 % in 2008.⁵⁷

5.2.2. UN Supplier Code of Conduct

The UN Code of Conduct⁵⁸ provides the minimum standards expected of suppliers to the UN. It is the expectation of the UN that suppliers adhere to all laws, rules and regulations, and strive to exceed both international and industry best practices. The Code of Conduct has been developed with recognition of the importance of the ILO Core Labour conventions and the ten principles of the UN Global Compact, and is viewed as an important means of integrating the Compact's principles into the operations of the UN.

The UN recognizes that reaching the standards established in this Code of Conduct is a dynamic rather than static process and encourages suppliers to continually improve their workplace conditions.

While a number of UN organizations have adopted the UN Supplier Code of Conduct (SCC), others, like ILO, are still to adopt a Code of Conduct. ILO intends to publish such a Code that will contain some provisions which differ from those of the UN SCC, particularly with respect to labour issues.

5.2.3. The OECD Guidelines for multinational enterprises

The OECD Guidelines for multinational enterprises⁵⁹ pursue the same goal at the ILO Tripartite Declaration of 1977. They contain recommendations addressed to multinational enterprises operating in or from adhering countries (the 34 OECD countries plus 8 non-OECD countries: Argentina, Brazil, Egypt, Latvia, Lithuania, Morocco, Peru and Romania). These recommendations are directly addressed to multinational enterprises and not to workers' and employers' organizations, since the OECD is not a tripartite organization like

⁵⁷ 2008 Annual Statistical Report on United Nations Procurement, UNOPS

⁵⁸ www.un.org/depts/ptd/pdf/conduct_english.pdf

⁵⁹ www.oecd.org/dataoecd/56/36/1922428.pdf

the ILO. The recommendations on employment and industrial relations make reference in concise terms to freedom of association, the abolition of child labour and forced or compulsory labour, as well as non-discrimination with respect to employment or occupation. The commentaries that accompany these guidelines recognize that the ILO is the competent body to set and deal with international labour standards, and to promote fundamental rights at work as recognized in its 1998 Declaration on Fundamental Principles and Rights at Work. They stress that the provisions of the guidelines on employment and industrial relations echo relevant provisions of the 1998 Declaration, as well as the 1977 Tripartite Declaration.

5.2.4. Other Codes of Conduct

In addition to the above-mentioned instruments that were adopted under the auspices of intergovernmental organizations, a number of codes of conduct were developed, either at the sectoral level or at a broader scale. Some of them are relevant for the social dimension of public procurement.

The NGO Social Accountability International (SAI)⁶⁰ developed the *SA8000 standard* that makes express reference to a number of ILO Conventions, including the eight core Conventions. Nonetheless, the ILO is not linked in any manner to the development and supervision of the implementation of the SA8000 standard. A voluntary certification procedure for companies has also been put in place.

In September 2010, the International Organization for Standardization (ISO) adopted the *International Standard ISO 26000:2010, Guidance on social responsibility. Contrary to other standards developed by the ISO, this standard cannot be used for certification purposes.* It is more comprehensive than the SA 8000 standard and provides guidance for organizations that voluntarily want to strengthen their social responsibility regarding in particular human rights (including fundamental rights at work) and working conditions. A Memorandum of Understanding was concluded between the ISO and the ILO to ensure consistency of the new standard with ILO standards.

5.3 International conventions in the maritime sector

5.3.1. The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) convention

The 1978 *STCW Convention* prescribes minimum standards relating to training, certification and watchkeeping for seafarers which countries are obliged to meet or exceed. The STCW Convention entered into in April 1984 and major revisions were adopted in 1995 and 2010.

The Manila amendments to the STCW Convention and Code were adopted on 25 June 2010, marking a major revision of the STCW Convention and Code. The 2010 amendments are set to enter into force on 1 January 2012 under the tacit acceptance procedure and are aimed at bringing the Convention and Code up to date with developments since they were initially adopted and to enable them to address issues that are anticipated to emerge in the foreseeable future.

Amongst the amendments adopted, there are a number of important changes to each chapter of the Convention and Code, including:

- Improved measures to prevent fraudulent practices associated with certificates of competency and strengthen the evaluation process (monitoring of Parties' compliance with the Convention);

⁶⁰ www.sa-intl.org/

- Revised requirements on hours of work and rest and new requirements for the prevention of drug and alcohol abuse, as well as updated standards relating to medical fitness standards for seafarers;
- New certification requirements for able seafarers;
- New requirements relating to training in modern technology such as electronic charts and information systems (ECDIS);
- New requirements for marine environment awareness training and training in leadership and teamwork;
- New training and certification requirements for electro-technical officers;
- Updating of competence requirements for personnel serving on board all types of tankers, including new requirements for personnel serving on liquefied gas tankers;
- New requirements for security training, as well as provisions to ensure that seafarers are properly trained to cope if their ship comes under attack by pirates;
- Introduction of modern training methodology including distance learning and web-based learning;
- New training guidance for personnel serving on board ships operating in polar waters; and
- New training guidance for personnel operating Dynamic Positioning Systems.

Parties to the Convention are required to provide detailed information to IMO concerning administrative measures taken to ensure compliance with the Convention.

A white list of countries deemed to be giving “full and complete effect” to the revised STCW Convention (STCW 95) is published by IMO.

As of 1 February 2002, masters and officers should hold STCW 95 certificates or endorsements issued by the flag State. Certificates issued and endorsed under the provisions of the 1978 STCW Convention will be valid until their expiry date.

5.3.2. The Maritime Labour Convention 2006

The *Maritime Labour Convention 2006* is an important new international labour Convention that was adopted by the International Labour Conference of the International Labour Organization (ILO) in February 2006. It sets out seafarers’ rights to decent conditions of work and helps to create conditions of fair competition for shipowners.

The aim of the convention is to maintain the standards in the current maritime labour conventions at their present level, while leaving each country greater discretion in the formulation of their national laws establishing that level of protection.

The Maritime Labour Convention, 2006 contains a comprehensive set of global standards, based on those that are already found in 68 maritime labour instruments (Conventions and Recommendations), adopted by the ILO since 1920. The new Convention brings almost all of the existing maritime labour instruments together in a single new Convention that uses a new format with some updating, where necessary, to reflect modern conditions and language. The Convention “consolidates” the existing international law on all these matters.

The existing ILO maritime labour Conventions will be gradually phased out as ILO Member States that have ratified those Conventions ratify the new Convention, but there will be a transitional period when some parallel Conventions will be in force. The Convention comprises three different but related parts: the Articles, the Regulations and the Code. The Articles and Regulations set out the core rights and principles and the basic obligations of Members ratifying the Convention. The Code contains the details for the implementation of the Regulations. It comprises Part A (mandatory Standards) and Part B (non-mandatory Guidelines).

The Regulations and the Code are organized into general areas under five titles:

| Title | Regulations | Purpose |
|--|--|---|
| 1: Minimum requirements for seafarers to work on a ship | 1.1 – Minimum age | To ensure that no under-age persons work on a ship |
| | 1.2 – Medical certificate | To ensure that all seafarers are medically fit to perform their duties at sea |
| | 1.3 – Training and qualifications | To ensure that seafarers are trained or qualified to carry out their duties on board ship |
| | 1.4 – Recruitment and placement | To ensure that seafarers have access to an efficient and well-regulated seafarer recruitment and placement system |
| 2: Conditions of employment | 2.1 – Seafarers' employment agreements | To ensure that seafarers have a fair employment agreement |
| | 2.2 – Wages | To ensure that seafarers are paid for their services |
| | 2.3 – Hours of work and hours of rest | To ensure that seafarers have regulated hours of work or hours of rest |
| | 2.4 – Entitlement to leave | To ensure that seafarers have adequate leave |
| | 2.5 – Repatriation | To ensure that seafarers are able to return home |
| | 2.6 – Seafarer compensation for the ship's loss or foundering | To ensure that seafarers are compensated when a ship is lost or has foundered |
| | 2.7 – Manning levels | To ensure that seafarers work on board ships with sufficient personnel for the safe, efficient and secure operation of the ship |
| | 2.8 – Career and skill development and opportunities for seafarers' employment | To promote career and skill development and employment opportunities for seafarers |
| 3: Accommodation, recreational facilities, food and catering | 3.1 – Accommodation and recreational facilities | To ensure that seafarers have decent accommodation and recreational facilities on board |

| | | |
|--|--|--|
| | 3.2 – Food and catering | To ensure that seafarers have access to good quality food and drinking water provided under regulated hygienic conditions |
| 4: Health protection, medical care, welfare and social security protection | 4.1 – Medical care on board ship and ashore | To protect the health of seafarers and ensure their prompt access to medical care on board ship and ashore |
| | 4.2 – Shipowners' liability | To ensure that seafarers are protected from the financial consequences of sickness, injury or death occurring in connection with their employment |
| | 4.3 – Health and safety protection and accident prevention | To ensure that seafarers' work environment on board ships promotes occupational safety and health |
| | 4.4 – Access to shore-based welfare facilities | To ensure that seafarers working on board a ship have access to shore-based facilities and services to secure their health and well-being |
| | 4.5 – Social security | To ensure that measures are taken with a view to providing seafarers with access to social security protection |
| 5: Compliance and enforcement | 5.1 – Flag State responsibilities | To ensure that each Member implements its responsibilities under this Convention with respect to ships that fly its flag |
| | 5.2 – Port State responsibilities | To enable each Member to implement its responsibilities under this Convention regarding international cooperation in the implementation and enforcement of the Convention standards on foreign ships |
| | 5.3 – Labour-supplying responsibilities | To ensure that each Member implements its responsibilities under this Convention as pertaining to seafarer recruitment |

Owners of operators of ships of 500 gross tonnage and above, engaged in international voyages or voyages between foreign ports, are required to develop and carry out plans for ensuring that the applicable national laws, regulations or other measures to implement the Convention are actually being complied with.

The Appendices to the Convention contain key model documents: a maritime labour certificate and a declaration of maritime labour compliance. The certificate would be issued by the flag State to a ship that flies its flag, once the State (or a recognized organization that has been authorized to carry out the inspections), has verified that the labour conditions on the ship comply with national laws and regulations implementing the Convention. The certificate would be valid for five years subject to periodic inspections by the flag State. The declaration is attached to the certificate and summarizes the national laws or regulations implementing an agreed-upon list of 14 areas of the maritime standards and setting out the shipowner's or operator's plan for ensuring that the national requirements implementing the Convention will be maintained on the ship between inspections.

5.4 Hours of Work and Rest Periods in road transport

Many countries have legislation related to hours of work and rest periods in road transportations.

Although only 9 countries have ratified the ILO Hours of Work and Rest Periods (Road Transport) Convention, 1979 (No. 153), it can be referred to in the context of establishing procurement requirements if no equivalent national legislation exists. The Convention sets out the following main provisions for wage-earning drivers:

- No driver shall be allowed to drive continuously for more than four hours without a break;
- The maximum total driving time, including overtime, shall exceed neither nine hours per day nor 48 hours per week;
- Every wage-earning driver shall be entitled to a break after a continuous period of five hours of work, and;
- The daily rest of drivers shall be at least ten consecutive hours during any 24-hour period starting from the beginning of the working day.

6. Risk management

Transporting freight with underperforming or high risk carriers poses a higher social and environmental risk and risk to the cargo they transport. Shipping with these carriers could lead to reputational damage to the United Nations. Examination of published data on underperforming carriers should be part of the sustainable procurement process. In particular for international air and maritime transport this data is published by several international and national authorities.

6.1 Air cargo

Aviation safety authorities control the safety of aircraft. Aircrafts and air transport operators found to be unsafe are banned from operating and listed. Although these lists are valuable for procurers it should be noted that country-level blacklists such as the European or the American ones are not endorsed by ICAO.

The United States Federal Aviation Administration (FAA) established the IASA program through public policy in August of 1992. FAA's foreign assessment program focuses on a country's ability, not the individual air carrier, to adhere to international standards and recommended practices for aircraft operations and maintenance established by the United Nation's technical agency for aviation, the International Civil Aviation Organization (ICAO).

www.faa.gov/about/initiatives/iasa/

The European Union and some other countries ban airlines found to be unsafe from operating in their airspace. These banned airlines are listed and publically available. One list includes all airlines banned from operating in Europe. A second list includes airlines which are restricted to operating in Europe under specific conditions.

www.ec.europa.eu/transport/air-ban/list_en.htm

6.2 Maritime transport

A way to assess the extent to which international regulations are being properly enforced is through an examination of published data concerning the performance of ships registered with particular flags by port state control authorities. These Port State Control authorities verify that the condition of a ship and its equipment comply with the requirements of international regulations and publish ship risk profiles, detention information and lists of under-performing ships. Several regional agreements between different port States have been concluded. These regional agreements are called Memoranda of Understanding on Port State Control. There are currently nine MoU on Port State Control: Paris MOU, Tokyo MOU, Vina del Mar (www.acuerdolatino.int.ar), Mediterranean MOU (www.medmou.org), Indian Ocean MOU (www.iomou.org), Caribbean MOU (www.caribbeanmou.org), Black Sea MOU (www.bsmou.org), West & Central Africa MOU (www.abujamou.org) and the Riyadh MOU (www.riyadhrou.org).

6.2.1. Paris Memorandum of Understanding on Port State Control

The Paris MoU organization consists of 27 participating maritime Administrations and covers the waters of the European coastal States and the North Atlantic basin from North America to Europe. The mission is to eliminate the operation of sub-standard ships through a harmonized system of port State control. The Paris MoU publishes a detention and banning lists and has developed a process for the ships that will be selected for a port State control inspection throughout the region.

To facilitate such selection, the central computer database known as 'THETIS' has been

developed. This information system, hosted by the European Maritime Safety Agency, informs national Port State Control authorities which ships are due for an inspection. Targeting of ships is based on a Ship Risk Profile according three categories High Risk Ship (HRS), Standard Risk Ship (SRS) or Low Risk Ships (LRS).

A new element which will help to categorize a ship is the inclusion of the performance of the ISM Company. Companies will, as the flag and recognized organization, be ranked. This ranking is done in four distinct grades: "above average", "average", "low" and "very low". The Company Performance (CP) Calculator takes historical events such as detentions, deficiencies and good inspections of the complete fleet of that company into account.

<http://parismou.org/>

www.emsa.europa.eu/appl/Company_Performance_Calculator.html

6.2.2. The Tokyo MOU

The Tokyo Memorandum of Understanding is an inter-governmental co-operative organization on port State control in the Asia-Pacific region to eliminate substandard shipping in the Asia-Pacific region and to promote the effective implementation, and the universal and uniform application, of relevant IMO/ILO instruments on ships operating in the region.

The organization publishes a detention and a list of under-performing ships which have been detained for three or more times by the Tokyo MOU during the last 12 months. The under-performing ship will be subjected to more frequent inspections at each and every port of call within the Tokyo MOU region. All Authorities of Tokyo MOU have been alerted to inspect under-performing ships if found.

www.tokyo-mou.org/

6.2.3. Equasis

The European Commission and the French Maritime Administration have developed Equasis, an information system collating existing safety-related information on ships from both public and private sources. Maritime authorities from Australia, France, Japan, Norway, Spain, the United Kingdom, and the European Maritime Safety Agency (EMSA) are participating in Equasis. The International Maritime Organization (IMO) and the US Coast Guard currently have observer status for Equasis.

The objective of Equasis is to promote the exchange of unbiased information and transparency in maritime transport and thus allow persons involved in maritime transport to be better informed about the performance of ships and maritime organizations with which they are dealing. Equasis is an internet based database covering the whole world fleet and can be used as tool for better selection of ships and to avoid freight transportation with safety related substandard shipping.

www.equasis.org

6.2.4. The US Coast Guard

The US Coast Guard publishes a detention and banning list and a listing of targeted ship management and charterers.

In developing its risk assessment methodology, the Coast Guard first recognized that three entities directly influence a vessel's operational condition and compliance with international safety and environmental protection standards. These entities are: 1) [Ship Management List of owners, operators and charterers](#), 2) [Classification societies](#), and 3) [Flag States](#). If any of these entities fails to fully undertake its responsibilities for a ship's safe operation, then the

ship is likely to be considered a substandard vessel by the U.S. Coast Guard.

The Coast Guard's previous experience with a particular ship provides another indication of whether or not that vessel poses an unacceptable risk. In addition, certain types of ships pose a higher risk to themselves and the cargo they transport. These vessel types include: oil and chemical tankers, gas carriers, passenger ships, bulk freighters more than ten years old, and any vessel carrying low value commodities in bulk.

<http://homeport.uscg.mil>

6.2.5. Flag States Performance

Flag states have to ratify international treaties and have overall responsibility for the implementation and enforcement of international regulations adopted by the IMO, ILO and other intergovernmental organizations for all ships granted the right to fly its flag.

The flag state will give a first indication of the likelihood of the environmental and social performance of a ship and shipping company. It should be noted that a flag state that has not ratified an international treaty could have implemented and enforced national regulations that comply with the vast majority of the detailed requirements contained within international regulations. It is also possible that a shipping company performs better than the minimum regulations imposed by its flag state.

The Round Table of shipping industry organizations - ICS, ISF, BIMCO, Intercargo and Intertanko – has published Guidelines on Flag State Performance and Shipping Industry Flag State Performance Table.

The information in this table can help procurers to identify the need for additional information but should not be used to exclude shipping companies or transport service providers automatically.⁶¹ This Flag State Performance Table is updated annually.

www.marisec.org/flag-performance.htm

6.2.6. GISIS

The secretariat of the IMO developed the IMO Global Integrated Shipping Information System (GISIS) in order to comply with the decisions by Member States requesting public access to sets of data collected by the Secretariat and stored in off-line databases. GISIS facilities allow the consultation of the information contained in the various modules and may also facilitate the fulfilment of mandatory and non-mandatory reporting requirements, by allowing also direct recording of, and amendment to, new and existing records by Member States' authorized data providers.

<http://gisis.imo.org/Public/>

6.2.7. Other instruments in the maritime sector

QUALSHIP 21

The US Coast Guard started in 2001 an initiative to identify high-quality ships, and provide incentives to encourage quality operations. This initiative is called QUALSHIP 21, quality shipping for the 21st century.

The Qualship 21 Certificate is valid for 2 years and vessel names are posted on U.S. Coast Guard Homeport & EQUASIS website. Ships holding a Qualship 21 certificate are rewarded with reductions in Coast Guard examinations and streamlined inspection procedures.

⁶¹ The table could penalize flag states with small fleets that do not trade regularly into the areas covered by the Paris MOU, Tokyo MOU or and the USCG

By closely examining Port State Control data from the previous 3 years, the characteristics of a typical "quality" vessel were identified. A quality vessel is associated with a well-run company, is classed by an organization with a quality track record, is registered with a Flag Administration with a superior Port State Control record, and has an outstanding Port State Control history in U.S. waters. Using these general criteria, approximately 10% of the foreign-flagged vessels that call in the U.S. qualify for the Qualship 21 certificate.

Only non-US flagged ships are eligible. Major other criteria are:

- No substandard vessel detentions in the U.S. within the previous 36 months.
- No marine violations or serious marine casualties, and no more than one ticket in the U.S. within the previous 36 months.
- Successful U.S. PSC Safety Exam within the previous 12 months.
- Not owned or operated by any company that has been associated with any PSC detention in U.S. waters within the previous 24 months.
- Not have their statutory convention certificates issued by, a targeted recognized organization (Targeted recognized organizations are any that have points assigned in the U.S. Port State Control Matrix).
- Not registered with a Flag Administration that has a detention ratio greater than 1.0% and the vessel's Flag

Vessel's Flag Administration must have submitted their Self-Assessment of Flag State Performance to the IMO and provided a copy to the U.S. Coast Guard.

The vessel's Flag Administration must submit their Executive Summary from their Voluntary Member State Audit Scheme audit to the U.S. Coast Guard or submit a letter/e-mail attesting to the fact that they have not yet undergone the audit but have submitted their request to be audited.

Green Award

Green Award⁶² certifies ships that are extra clean and extra safe. The Green Award certification scheme is open to oil tankers and dry bulk carriers from 20,000 Dead Weight Tonnage (DWT) and upwards.

The Green Award procedure is carried out by the Bureau Green Award, the executive body of the independent non-profit Green Award Foundation. The Green Award Foundation is an independent foundation, established 1994 on the initiative of the Rotterdam Municipal Port Management and the Dutch Ministry of Transport. Since 1 January 2000 Green Award is completely independent. Originally only for tanker operating companies the Green Award system has also been open since 2001 to dry cargo bulk carriers of 20,000 DWT and above.

The certification procedure consists of an office audit and an audit of each individual ship applying for certification. The assessment focuses on crew, operational, environmental and managerial elements.

The Green award requirements consist of three parts:

- Basic requirements (statutory elements related to ISM, MARPOL)
- Ranking requirements (weighted items, minimum % to be attained)
- Visual inspection (seaworthiness, good housekeeping)

A Green Award certificate is valid for three years and subject to annual verification.

Several ports, government institutions as well as private companies, grant savings such as reduction on port dues to a vessel with a Green Award certificate.

⁶² www.greenaward.org

7. How to integrate sustainability criteria in the procurement cycle of freight forwarding

The responsibility of freight transportation service providers to respect sustainability standards applies to all enterprises regardless of their size, operational context, ownership and structure. Nevertheless, the scale and complexity of the means through which enterprises meet that responsibility may vary according to these factors and with the severity of the enterprise's potential adverse impacts on the environment, and on social and human rights.⁶³

While transport service providers do not always have direct influence on the outsourced operation in all cases, they strongly influence the transportation industry by the choices they make in determining who to hire. The same is true for UN and other organizations that procure freight transportation services.

Sustainable criteria can be related to the actual performance of a transport service provider or set as a requirement that should be implemented by selected suppliers within a certain period of time.

UN Organizations should define the criteria that should be included in the procurement process to ensure that improved sustainable performance is realized.

Sustainability criteria should be ambitious but also feasible for transport service providers.

The freight transport market is characterized by its large number of transport companies although in specific markets and circumstances, the choice between suppliers could be limited.

Differences in market circumstances should be taken into account including the actual sustainability performance of the group of potential providers and the diversity in performance within that group. Criteria should be differentiated accordingly and should not be based only on the actual performance of the most advanced freight transport service providers in developed countries. Criteria based on the best performers are only relevant for freight transportation services in developed countries and for a part of the international transport services market, while the procurement of freight transportation services in the UN often involves suppliers from less developed economies, lacking the capacities to meet Western operating standards without considerable support and investment.

In any of these market circumstances, open and mutual communication with suppliers is paramount - it is necessary for procurers to define the level of ambition for sustainability in the tender; and it allows suppliers to react in good time to new requirements, to present their sustainability improvements in relation to the prevailing market conditions and to compete on sustainability as well as on other quality and financial criteria.

We recommend the following steps to develop a sustainable procurement of freight transportation services.

Step 1 - Develop a baseline based on an assessment of the sustainability performance of the existing situation

Quantifying the sustainable performance of the existing transportation service providers provides the baseline from which meaningful and realistic goals can be set and performance can be measured over time. Assessing the sustainability performance also

⁶³ The "Guiding Principles on Business and Human Rights: Implementing the United Nations 'Protect, Respect and Remedy' Framework" for consideration by the Human Rights Council, provides a framework that can be extended as well to other sustainability aspects than Human Rights. www.business-humanrights.org/media/documents/ruggie/ruggie-guiding-principles-21-mar-2011.pdf

facilitates the identification of low hanging fruits, where sustainability improvements are interweaved with efficiency gains (for instance avoiding waste of time, space, transport, fuel, etc. see step 2). Key Performance Indicators and a sustainability balanced scoreboard are good instruments to assess performance as well as progress.⁶⁴

Step 2 - Investigate and implement freight transportation avoidance strategies

In the pre-procurement phase an analysis should take place to investigate the opportunities to avoid or minimize the need for transport and the possibilities to shift to cleaner freight transport modes. Transport and logistics cooperation with other UN organizations are instruments to improve transport and logistics asset utilization.

Step 3 – Develop meaningful requirements and targets

Developing targets and meaningful requirements can be based on a good knowledge of existing legislation, international conventions and all kind of voluntary initiatives in the area of sustainability and sustainable procurement.

To better understand the challenges, opportunities as well as the feasibility of potential sustainability requirements a dialogue with existing transport service providers is also necessary. A segmentation of targets and requirements per submarket could be needed to take the specificity of submarkets into account.

International conventions with an impact on the sustainability of freight transportation and related work in UN organizations such as the IMO, ICAO and ILO provide a large source of information that can be used to set basic as well as more advanced requirements.

Other important overarching values that the UN expects from its suppliers including the ten principles covered by the UN Global Compact should be integrated in the set of procurement requirements. The recommendations of the Special Representative of the United Nations Secretary-General, John Ruggie, related to Business and Human Rights provides an internationally accepted basis for issues related to Human Rights but is also a good framework for other sustainability aspects.

Exchanging information on targets, requirements and best practices with other UN organizations will raise the level of attention on sustainable procurement of freight transportation services and will be helpful in developing a good policy.

As attention on sustainable freight transportation, including the instrument of sustainable procurement of transportation in the public and private sector is rapidly growing, much can be learned from programs such as the SmartWay partnership from the USP EPA and other similar initiatives in other parts of the world.

Defining specific technological requirements without a detailed knowledge and analysis should be avoided. There are a wide variety of technical options to improve the environmental performance of freight transportation. Some technical solutions such as the use of low sulfur fuels have a direct positive effect on the environmental performance of freight transportation. But for many other technical solutions the best package of measures to improve energy efficiency and lower emissions differs and depends upon many factors. This means that the most efficient combination of technical measures will be to a large extent unique to each freight transport company, fleet and even vehicle or vessel type.

⁶⁴ Frank Figge, Tobias Hahn,* Stefan Schaltegger and Marcus Wagner: "The sustainability balanced scorecard – linking sustainability management to business strategy". Centre for Sustainability Management, University of Lüneburg, Germany, Business Strategy and the Environment, 2002

Step 4 – Investigate and define a verification policy

The verification options and policy in relation to the sustainability performance of suppliers should be investigated and defined. A balance should be achieved between verification objectives and cost and time efforts on the other hand.

The UN Supplier code of conduct defines that the UN may conduct on-site evaluations and inspections of its supplier's facilities and those of their subcontractors to review their progress towards these principles.

External verification can come from existing control procedures and monitoring by public authorities such as port control authorities, voluntary programs of industry trade associations or/and from third party auditing companies.

Self-verification declarations of suppliers can be checked by asking for additional documents and by cross checking with public available information such as the Equasis data source for the maritime sector. Equasis and other external data information sources described in chapter 7 are interesting instruments to integrate in a sustainable risk management system.

Step 5 – Communicate and integrate targets and requirements in the procurement cycle

Existing and potential future transport service providers should be informed about the sustainable procurement policy of the UN and of more specific targets and requirements.

Suppliers should be encouraged to actively participate in the UN Global Compact as this offers to private companies a framework of ten principles, assisting them in building their corporate social and environmental responsibility.

Between tendering rounds, suppliers should be kept regularly informed of the UN sustainability targets and encouraged to bring forward any innovative sustainability improvements. During long-term contract execution, suppliers should be engaged in periodic sustainability review meetings, with special focus on win-win objectives (e.g. the achievement of resource efficiencies connected with emission reductions).

The product sheet provides basic and advanced sustainability criteria for the various phases or steps of the UN procurement cycle. Guidance is also provided on how compliance with the criteria should be verified.

Step 6 – Monitor progress and adapt targets and requirements accordingly

Progress should be monitored over time based on regular evaluation and verification of the sustainability performance of transport service suppliers. Sustainable procurement targets and best practices in other UN organizations and outside the UN can be used as a benchmark to assess and adapt own targets and requirements.

8. Information sources

8.1 General sources on sustainable freight transportation

Mobility 2030: Meeting the challenges to sustainability, The Sustainable Mobility Project, World Business Council for Sustainable Development, 2004

www.wbcsd.org/web/publications/mobility/mobility-full.pdf

Supply Chain Decarbonization, World Economic Forum, 2009

www.weforum.org/reports/supply-chain-decarbonization?fo=1

Alan McKinnon (2008) 'The Potential of Economic Incentives to Reduce CO2 Emissions from Goods Transport' paper prepared for the International Transport Forum on Transport and Energy: the Challenge of Climate Change', Leipzig

www.internationaltransportforum.org/Topics/Workshops/WS3McKinnon.pdf

Christopher Frey and Po-Yao Kuo, Best Practices Guidebook for Greenhouse Gas Reductions in Freight Transportation, U.S. Department of Transportation, 2007

www4.ncsu.edu/~frey/reports/Frey_Kuo_071004.pdf

8.2 Logistics and supply chains

Logistics Operational Guide

The Logistics Operational Guide (LOG) is developed by representatives of a wide range of humanitarian organizations, facilitated by the Global Logistics Cluster Support Cell and WFP. The tool provides a collection of information such as best practices, templates, guidelines and standard operating procedures for logisticians operating in the field.

<http://log.logcluster.org/index.html>

8.3 Road transport

The UNEP/TNT Toolkit for Clean Fleet Strategy Development

This Toolkit support fleet operators to develop a strategy for reducing the environmental impacts of their fleet. The toolkit provides information and an excel sheet to assess the impact of a range of emission mitigation measures. .

www.unep.org/tnt-unep/toolkit/index.html

Partnership for Clean Fuels and Vehicles

The Partnership for Clean Fuels and Vehicles (PCFV) assists developing countries to reduce vehicular air pollution through the promotion of lead-free, low sulfur fuels and cleaner vehicle standards and technologies.

The Partnership aims to support developing countries in their efforts to improve fuel and vehicle technologies that reduce air pollution. The Partnership builds on current trends and efforts in the development of fuel and vehicle technologies. Constant improvements in these technologies have been introduced and diffused for decades.

www.unep.org/transport/pcfvl/

The Global Fuel Economy Initiative

Comprised of four organizations – the FIA Foundation, International Energy Agency, the International Transport Forum and the United Nations Environment Programme – the Global

Fuel Economy Initiative (GFEI) works to promote auto fuel and vehicle efficiency worldwide. The GFEI aims for a doubling of global vehicle fuel efficiency by 2050 as an integral contribution to a low carbon economy and greener transport systems. Within the GFEI, UNEP leads in supporting developing and transitional countries to develop clean and more efficient vehicle policies and programs to reduce vehicular emissions in line with internationally agreed targets.

By providing the space for discussion on automotive fuel economy and the expertise to develop policies in-country, the GFEI serves as a bridge between auto, government, international organizations, and NGO groups worldwide while also enabling change at the national level.

www.globalfuelconomy.org/Pages/Homepage.aspx

The US Environmental Protection Agency (EPA) launched SmartWay in 2004 as an innovative brand that represents environmentally cleaner, more fuel-efficient transportation options. The EPA has evaluated the fuel saving benefits of various devices and provides information on these fuel saving and /or emission reducing technologies.

www.epa.gov/smartwaylogistics/

The UK Freight Best Practice program offers information for the freight industry covering topics such as saving fuel, developing skills, equipment and systems, performance management and multi modal.

www.freightbestpractice.org.uk

8.4 Air Transport

The International Civil Aviation Organization

www.icao.int

ICAO Environmental report 2010 - Aviation and Climate Change, ICAO, 2010

www.icao.int/icao/en/env2010/environmentreport_2010.pdf

Aviation & Emissions - A Primer, Federal Aviation Administration, Office of Environment and Energy, 2005

www.faa.gov/regulations_policies/policy_guidance/envir_policy/media/aeprimer.pdf

Enviro.aero has been established by the commercial aviation industry body, the Air Transport Action Group (ATAG) and promotes aviation's sustainable growth.

www.enviro.aero/

8.5 Maritime Transport

International Maritime Organization

www.imo.org

Second IMO GHG Study, IMO, 2009

www5.imo.org/SharePoint/mainframe.asp?topic_id=1823

ILO's Maritime Labour Convention (MLC), 2006

www.ilo.org/global/standards/maritime-labour-convention/lang--en/index.htm

The GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast)

<http://globallast.imo.org/>

The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) is an advisory body, established in 1969, that advises the United Nations (UN) system on the scientific aspects of marine environmental protection.

www.gesamp.org/

8.6 Rail transport

Railenergy is an Integrated Project co-funded by the European Commission and provides information on the energy efficiency of the integrated railway system and to investigate and validate solutions ranging from the introduction of innovative traction technologies, components and layouts to the development of rolling stock, operation and infrastructure management strategies.

www.railenergy.org/

8.7 Alternative fuels

Technology Roadmap. Biofuels for Transport, International Energy Agency, 2011

www.iea.org/papers/2011/biofuels_roadmap.pdf

OECD ITF (2008) Biofuels: Linking Support to Performance, Discussion paper No. 2008 - 7

www.internationaltransportforum.org/jtrc/DiscussionPapers/DP200807.pdf

Well-to-wheels analysis of future automotive fuels and powertrains in the European context tank-to-wheels Report, Version 3, October 2008

<http://ies.jrc.ec.europa.eu/jec-research-collaboration/downloads-jec.html>

SUSTAINABLE UNITED NATIONS

Sustainable United Nations (SUN) is a UNEP initiative that provides support to UN and other organisations to reduce their greenhouse gas emissions and improve their sustainability overall.

SUN was established in response to the call from UN Secretary General Ban Ki-Moon at the World Environment Day 2007 (5 June), to all UN agencies, funds and programmes to reduce their carbon footprints and “go green”. This call was echoed in October 2007 in a decision of the UN Chief Executives Board (CEB/2007/2, annex II) to adopt the UN Climate Neutral Strategy, which commits all UN organisations to move towards climate neutrality. Within this context, SUN is working with the UN Environment Management Group – the UN body coordinating common environmental work within UN – to provide guidance, and develop tools and models for emission reduction within organisations.



**Sustainable
United Nations**

ALTIMEDES

Altmedes Consulting (www.altmedes.com) is a Brussels based international management consulting firm combining a strong expertise in horizontal logistics collaboration, energy management, corporate responsibility and sustainable development in the freight transport and logistics sector. Altmedes collaborates with public authorities and clients in the private sector to help them reach much higher performance levels in energy efficient and sustainable freight transportation, logistics and supply chains. Altmedes is a founding member of the Green Logistics Consultants Group (www.greenlogisticsconsultants.com), a global collaborative network of consulting companies with a focus on sustainable transportation and logistics.





For more information

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About the Sustainable Procurement Guidelines

The UN operates to achieve the goals of peace, equality, sustainable development and respect for human rights. The way the UN manages its operations and procures products and services should reflect these goals.

Ensuring lowest environmental and most positive social impact of procurement does not only build on the international community commitments. It also manages the reputational risks associated with labour exploitation or environmental damage in the supply chain; it gives a strong signal to the market and encourages the innovative production of cleaner and more ethical products enhancing an economy based on social and environmental responsibility.

These guidelines are designed to assist UN procurers and requisitioners in their choice to include sustainability considerations in their procurement work. They are built on the recognition that market situations are different from one country to another and thus provide advice based on research made about availability of more sustainable products in world regions. Overall, the guidelines provide a comprehensive overview of the specific factors affecting the sustainability of a given product category and suggest a language and specific criteria to include sustainability in tenders.

Guidelines are specifically provided for the areas of:

- IT equipment
- Cleaning
- Furniture
- Stationary
- Vehicles
- Cafeterias, Food and Kitchen equipment.
- Freight Forwarding
- Generators and Batteries
- Carbon Credits

They are available at: www.greeningtheblue.org and www.ungm.org