"Healthy Oceans – Healthy Coast"
International Leadership Conference towards achieving SDG 14
"Current challenges and opportunities in ocean and coastal sustainable development"
~ Celebrating 45 years of IOI and its work in Sustainable Ocean Governance ~
25-26 April, 2017 – Hong Kong

Sustainability in Shipping

Professor Chin-Shan Lu and Dr. T. L. Yip
Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University
The C.Y. Tung International Centre for Maritime Studies


Shaping the Mind of Business

Outline

- Introduction
- Definition of Sustainability
- Sustainability Practices in Shipping
- Green Strategies Suggestions

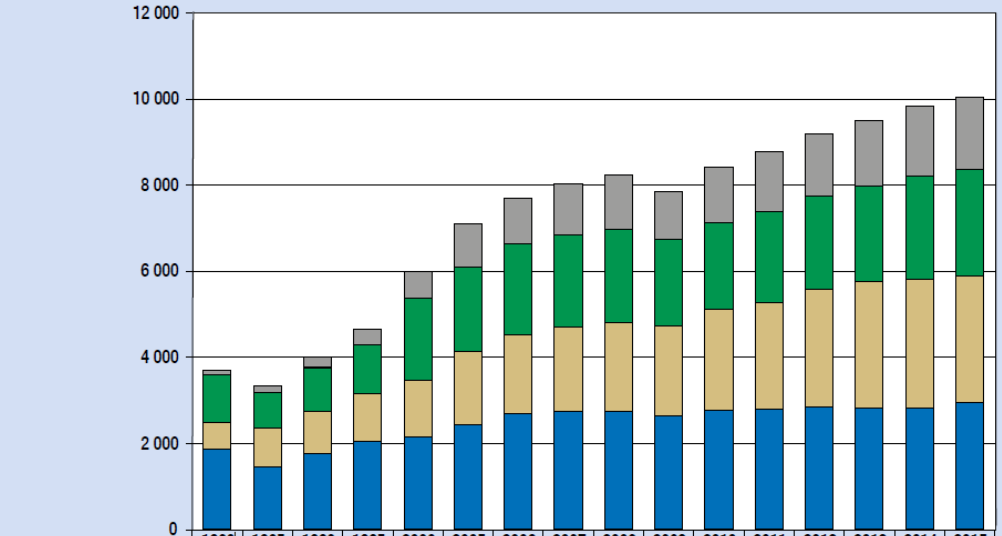
Introduction

International maritime transport carries over 80 per cent of the volume of world trade and is vital to global trade, which makes a crucial contribution to the economy and society.

Introduction

The world seaborne trade has significantly increased in the period from 2002 to 2014 with an above three per cent growth rate annually. UNCTAD (2016) indicated that the 2015 international seaborne trade over 10 billion tons of total goods.

Figure 1.2 International seaborne trade, selected years (Millions of tons loaded)

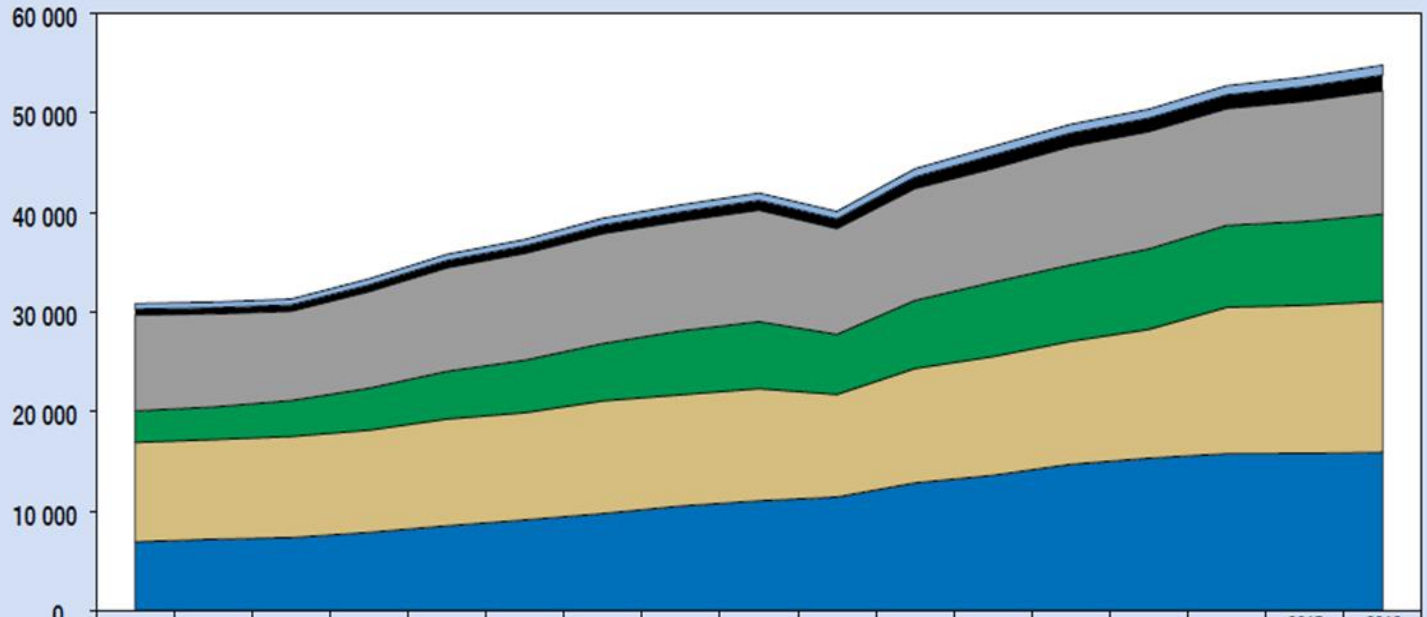


	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Containers	102	152	234	371	598	1 001	1 076	1 193	1 249	1 127	1 280	1 393	1 464	1 544	1640	1687
Dry cargo other than main bulk commodities	1 123	819	1 031	1 125	1 928	1 975	2 112	2 141	2 173	2 004	2 022	2 112	2 150	2 218	2393	2463
Main bulk commodities	608	900	988	1 105	1 295	1 711	1 814	1 953	2 065	2 085	2 335	2 486	2 742	2 923	2985	2951
Oil and gas	1 871	1 459	1 755	2 050	2 163	2 422	2 698	2 747	2 742	2 642	2 772	2 794	2 841	2 829	2 825	2 947

Source:UNCTAD(2016)

Introduction

Figure 1.3 World seaborne trade by cargo type, 2000–2016 (Estimated billions of ton–miles)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 (estimate)	2016 (forecast)
Chemicals	552	562	593	606	625	651	689	724	736	765	824	864	889	908	914	953	998
Gas	576	591	611	662	719	736	833	913	956	958	1 147	1 344	1 346	1 347	1 392	1 467	1 561
Oil	9 631	9 352	8 971	9 698	10 393	10 729	11 036	11 011	11 200	10 621	11 237	11 417	11 890	11 779	11 717	12 059	12 410
Containers	3 170	3 271	3 601	4 216	4 785	5 269	5 757	6 422	6 734	6 030	6 833	7 469	7 673	8 076	8 237	8 428	8 757
Other (minor bulk commodities and other dry cargo)	9 998	10 023	10 167	10 275	10 729	10 782	11 330	11 186	11 272	10 325	11 504	11 927	12 375	12 952	14 707	14 892	15 156
Main bulk commodities	6 896	7 158	7 331	7 852	8 527	9 107	9 745	10 503	11 028	11 400	12 824	13 596	14 691	15 312	15 768	15 790	15 918

However, the dramatic growth in the maritime sector has also brought about some concerns on its environmental impacts such as noise, air and oil pollution, waste and demand on energy.

International shipping causes around 3 per cent of the global carbon dioxide emissions from fuel combustion (UNCTAD, 2010).

Air Pollution

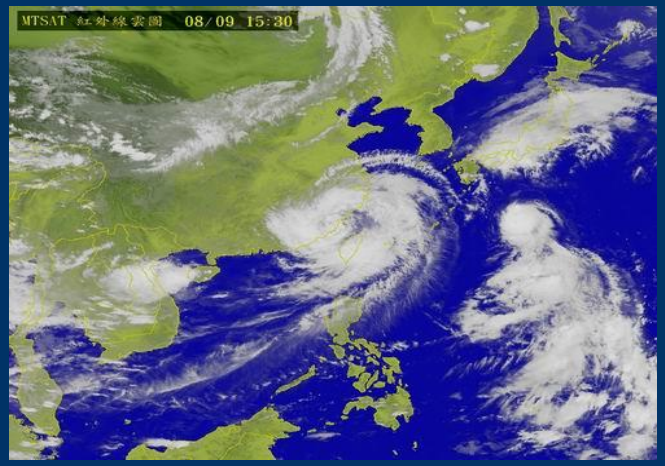
Shipping Emissions

Total shipping emissions	Amount	
	in million tonnes	% of global emissions
CO_2 (International shipping)	1,046 (870)	3.3 (2.7)
NOx	20	20 to 30
SOx	12	10
PM	1.5	

Shipping is the most energy efficient mode of transportation

Shipping, as key links in the supply chain, are critical to the trade and transportation networks. Like other economic sectors, the shipping sector is facing a dual challenge in relation to climate change and needs to reduce its contribution to global warming.

Climate change is likely to cause sea levels to rise, lake levels to drop, more frequent and severe storms, and increases in extreme high temperatures.



Marine Stakeholder

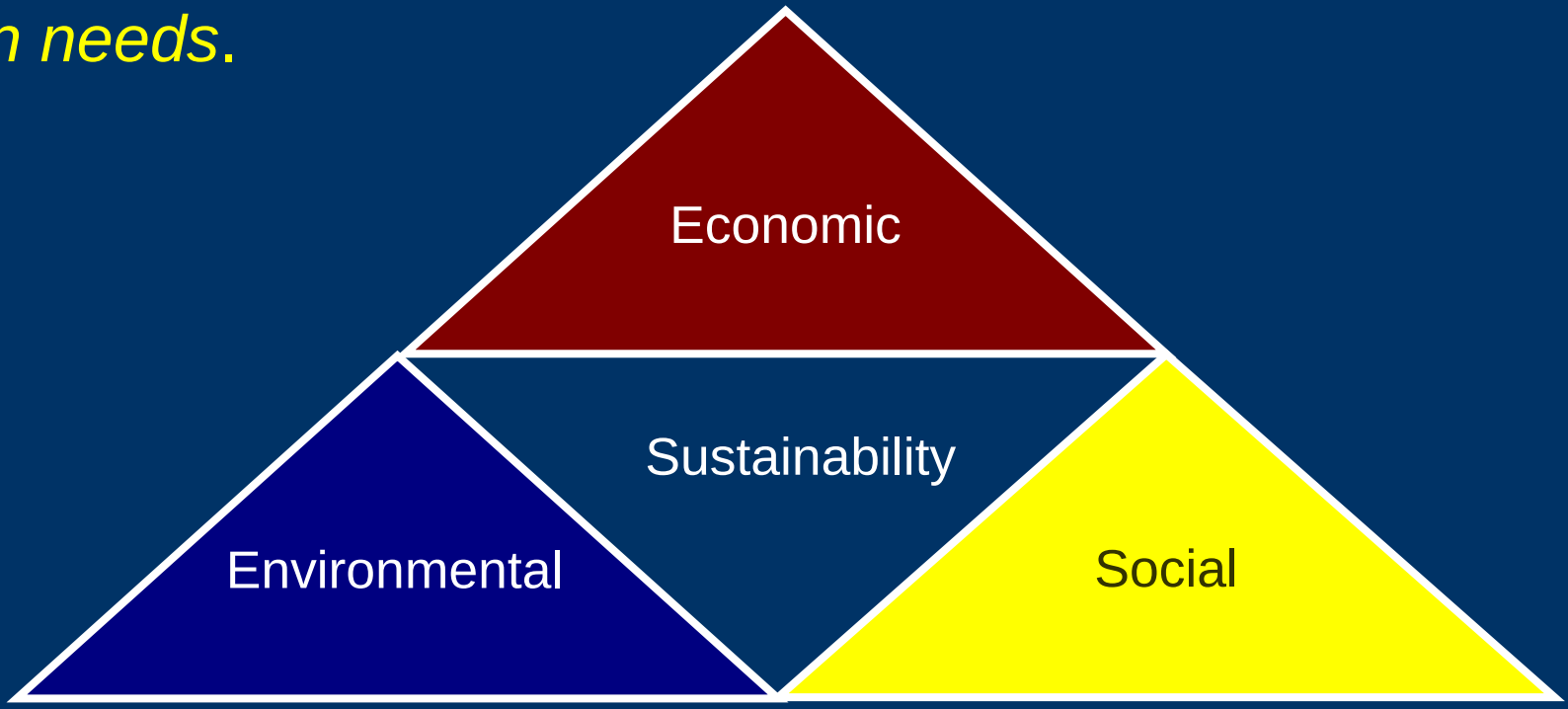
Pressure from Stakeholders

- laws and regulations impose constraints and create obligations and rights.
- failure to address social and environmental demands may damage or stop a firm's operations, e.g. customers' power; investors will want to protect their own public image.
- insurers: higher premiums / refuse to offer cover.
- Seafarers: union bargaining power, strikes, boycotts, black lists.
- Wider community: pressure on governments, policy makers due to increased public awareness.

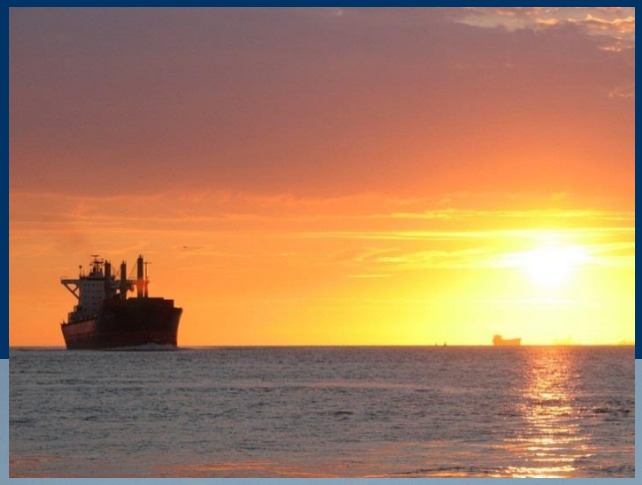
Therefore, shipping companies are beginning to define broader sustainability policies that extend beyond environment stewardship. A key concept of sustainability is that it is not limited to environmental stewardship. Rather, sustainability focuses on understanding the interconnections among the economy, society, and environment, and the equitable distribution of resources and opportunities.

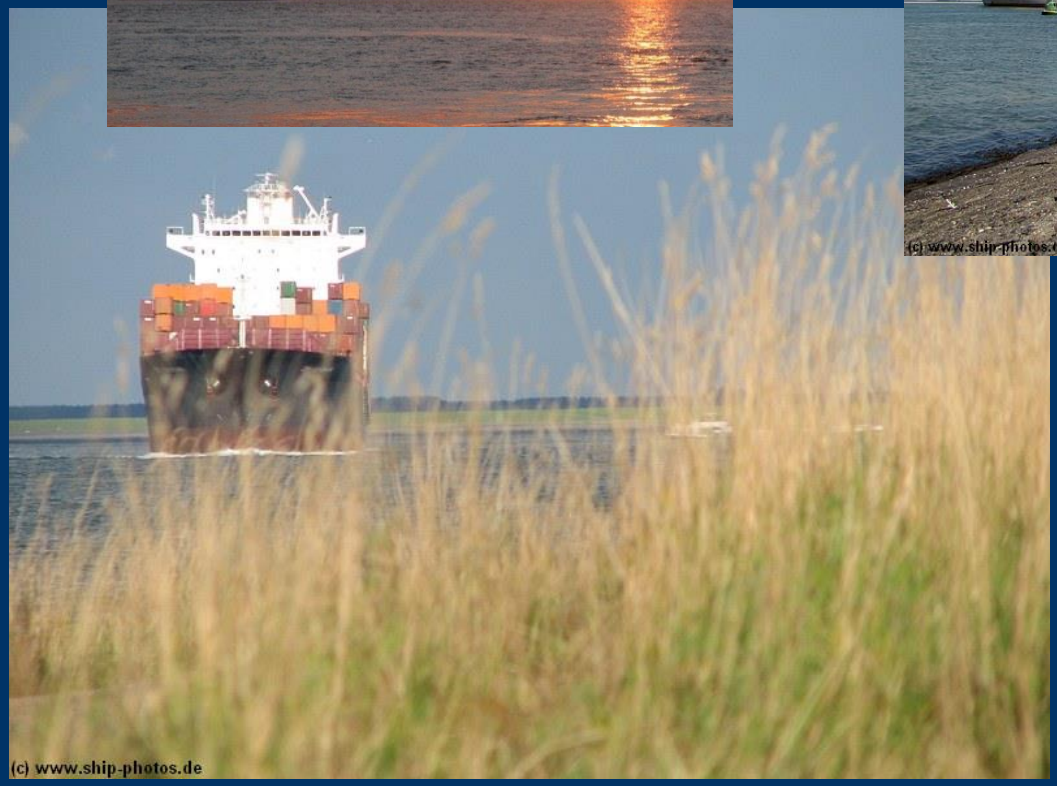
Definition of Sustainability

World Commission on Environment and Development (also known as the Brundtland Commission) of the United Nations on March 20, 1987, which defined sustainable development as *development that meet the needs of the present without compromising the ability of future generations to meet their own needs*.



Motive force of economy to sustainable direction





- The purpose of IMO can be summarized by the phrase:

"Safe, secure and efficient shipping on clean oceans" .

Sustainability issues

Typically facing the Shipping Companies -

Ecocnomic
- Revenue management
  - world debt
  - credit crisis
- Earnings
- Costs - resource efficiency
- Business continuity
  - access to new oil reserves / energy
  - new fuel technology
  - Information Security Management

Stricter competition with international companies / taxes, etc

Social
- Employees
  - diversity
  - job creation
  - human factors
  - training & development
  - Cultural audits
  - Safety (fatalities)
- Business ethics
  - standards / codes of practice
  - bribery and corruption
  - political activity
- Human rights especially in supply chain and exploration (ILO)
- Growing and aging populations
- Poverty

Environment
- Regulatory compliance
- Emissions reduction
- Waste minimisation
- Climate change
  - carbon reduction
  - energy efficiency and products
  - ISO 14064, GHG
- Green procurement (i.e. Green Passport)
- Spill prevention/pollution
- Biodiversity (BWM)
- Working in environmentally sensitive areas

SUSTAINABILITY

Sustainability and Corporate Social Responsibility

- Sustainability and CSR have evolved from being voluntary to mandatory (pressure from stakeholders) – and then to an investment (for improvement of long-term business performance)
- 'enlightened self-interest': companies adopt a socially responsible approach not for any philanthropic reason but in pursuit of good business practice and organizational efficiency

↓

- potential increase in business
- cost savings (on fines, lawsuits, clean-up costs, claims, increased premiums, and falls in share prices that might have been incurred)
- efficient use of raw materials (fuel oil / consumption / engine)
- self-regulation could help in a number of ways
- attract well-qualified seafarers
- fewer inspections
- faster turnaround in ports

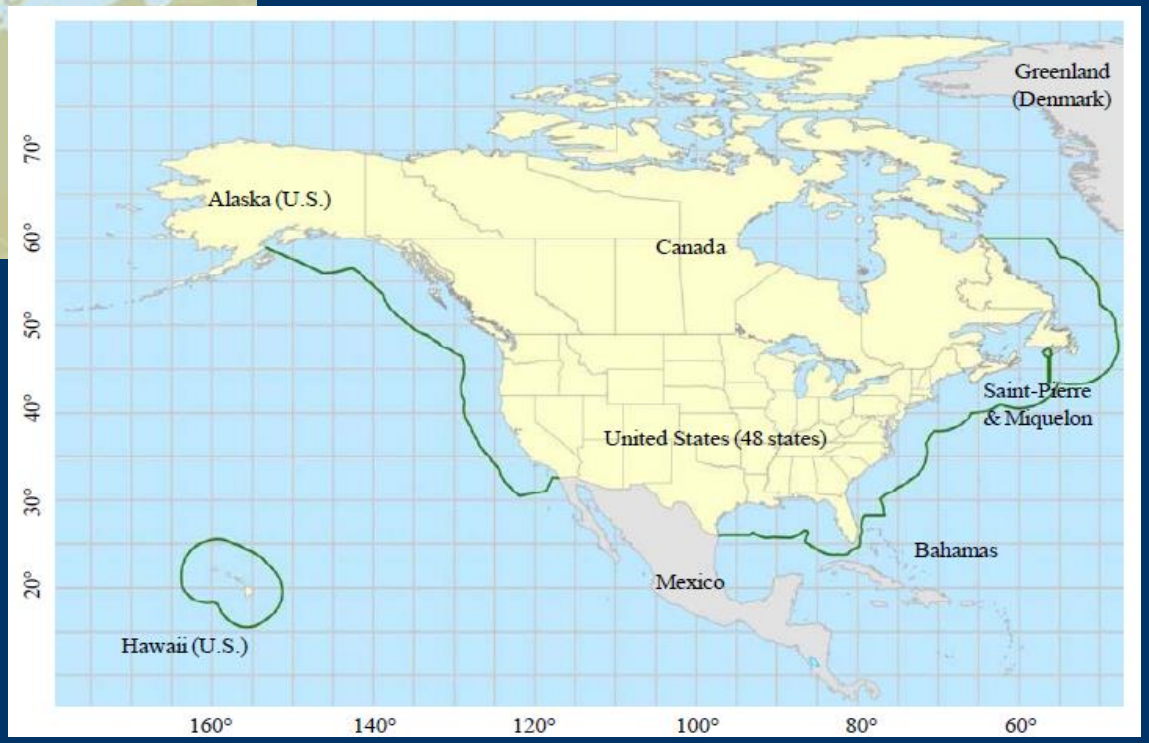
Environmental Issues

Environmental Indicators

- Sea Pollution
- Energy consumption
- Air pollution (SOx, NOx, CO2)
- Raw materials consumption (e.g. ship construction/recycling)
- Biodiversity: (ballast water management)
- Land pollution (from ship dismantling)
- Noise pollution (e.g. affecting communities near ports)

Health Risk

Emission Control Areas



INTERNATIONAL MARITIME ORGANIZATION

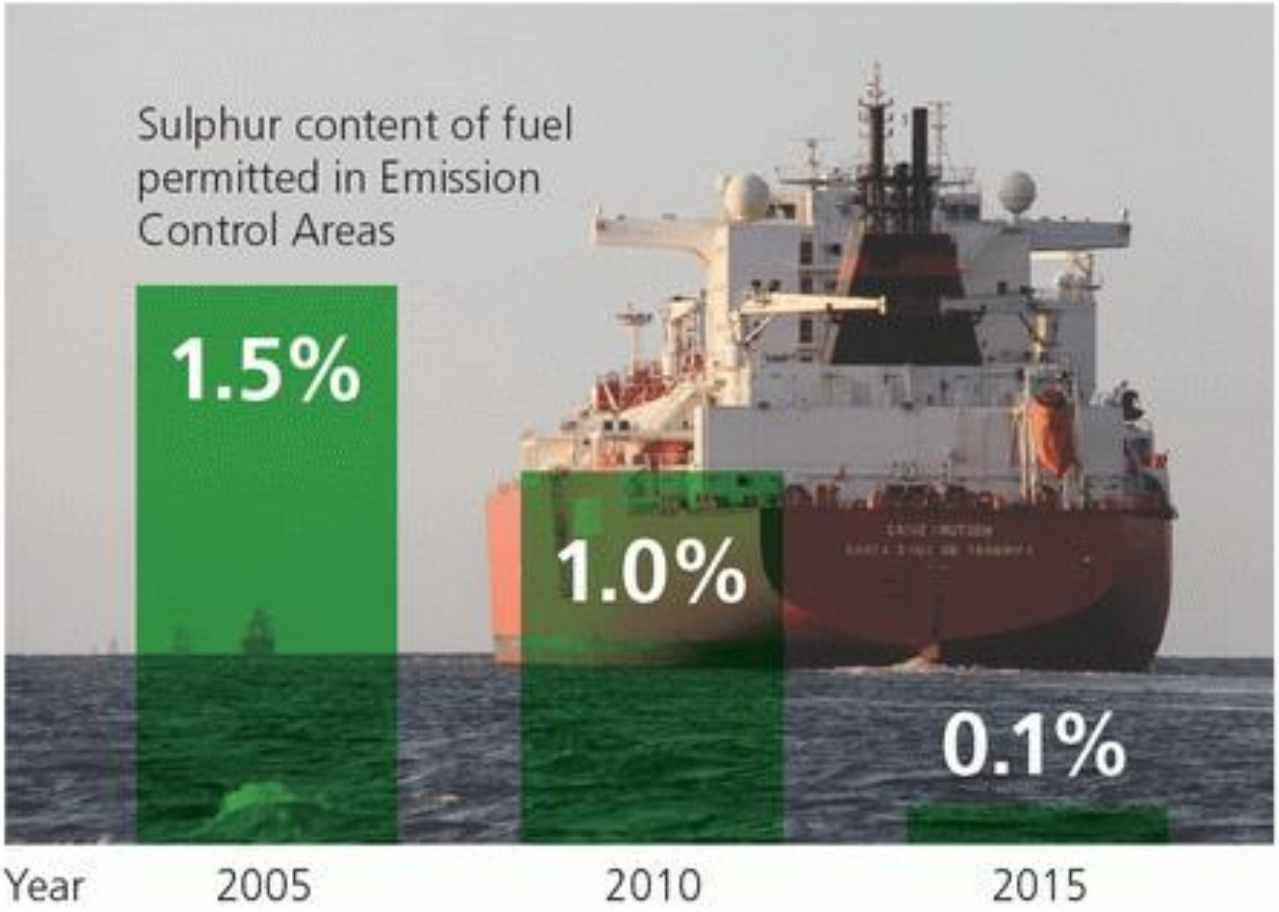
Sulphur oxides (SOx) – Regulation 14

SO_x and particulate matter emission controls apply to all fuel oil, as defined in regulation 2.9, combustion equipment and devices onboard and therefore include both main and all auxiliary engines together with items such boilers and inert gas generators. These controls divide between those applicable inside Emission Control Areas (ECA) established to limit the emission of SO_x and particulate matter and those applicable outside such areas and are primarily achieved by limiting the maximum sulphur content of the fuel oils as loaded, bunkered, and subsequently used onboard. These fuel oil sulphur limits (expressed in terms of % m/m – that is by weight) are subject to a series of step changes over the years, regulations 14.1 and 14.4:

Outside an ECA established to limit SOx and particulate matter emissions	Inside an ECA established to limit SOx and particulate matter emissions
4.50% m/m prior to 1 January 2012	1.50% m/m prior to 1 July 2010
3.50% m/m on and after 1 January 2012	1.00% m/m on and after 1 July 2010
0.50% m/m on and after 1 January 2020*	0.10% m/m on and after 1 January 2015

* depending on the outcome of a review, to be concluded by 2018, as to the availability of the required fuel oil, this date could be deferred to 1 January 2025.

IMO agreement to reduce atmospheric pollution from ships



BIODIVERSITY - Ballast Water Management

- Ballast Water Management Convention 2004, adopted 13 February 2004, requiring ballast water and sediment management on all voyages

Hull Bio - Fouling

Whale (Collisions with commercial ships are the greatest threat to North Atlantic Right Whales. Both summer feeding ranges and winter calving grounds are located in busy shipping channels.)

Economic Issues

Economic Indicators

- Freight transport demand
- Freight transport earnings/profits
- Total ship losses/repairs
- P&I claims
- Contribution to national economic indicators
- Investments in transport infrastructure
- External costs (e.g. capital, operational and voyage costs)

Source: Mitroussi and Pettit 2007

Technological Indicators

- Degree of automation
- Average age of fleet
- Size of the fleet
- Energy efficiency for transport of freight
- Adoption of air/water pollution prevention technology (e.g. emissions: per tonne-kilometre; proportion of fleet meeting emission standards / double hull standards)
- Uptake of cleaner fuels and number of alternative fuel vessels
- Cargo handling infrastructure (aboard/ashore)

Operational Indicators

- Fleet productivity, eg load factor for ships
- Cost minimization
- Employee turnover
- Inventory costs
- Time costs
- Use of IT

Possible measures for Cargo ship

IMO recommends a list of best practices for Fuel-Efficient Operations of Ships

- **Fuel-Efficient Operations**
  - Weather routeing
  - Just in time (Port communication, speed selection)
  - Speed optimization (slow steaming)
  - Optimized shaft power
- **Optimized ship handling**
  - Optimum trim/ballast
  - Optimum ballast
  - Optimum propeller and propeller inflow considerations
  - Optimum use of rudder and heading control systems (autopilots)
- **Hull maintenance**
- **Propulsion system maintenance**
- **Waste heat recovery**
- **Improved fleet management**
- **Energy management**
- **Fuel Type…**

Press Briefings
Meeting Summaries
Secretary-General
IMO Maritime Ambassador scheme
Whats New
Hot Topics
Unsafe mixed migration by sea
Polar Code
Ballast Water Management
Ebola virus disease
Passenger ship safety
Air pollution and energy efficiency
EEDI - rational,safe, effective

Energy efficiency and the the reduction of GHG emissions from ships

The MARPOL Convention addresses air pollution and emissions from ships deals under Annex VI, first adopted in 1997.

A revised Annex VI was adopted in 2005 and it entered into force in 2010, phasing in a progressive reduction in sulphur oxide (SOx) from ships and further reductions in nitrogen oxide (NOx) emissions from marine engines. Amendments adopted in 2011 set mandatory measures to reduce emissions of greenhouse gases (GHGs) from international shipping, with the Energy Efficiency Design Index (EEDI) made mandatory for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) made a requirement for all ships. These amendments enter into force on 1 January 2013

Mandatory measures to reduce emissions of greenhouse gases (GHGs) from international shipping entered into force on 1 January 2013.

The amendments to MARPOL Annex VI Regulations for the prevention of air pollution from ships, which entered into force on 1 January 2013, add a new chapter 4 to Annex VI on Regulations on energy efficiency for ships to make mandatory the Energy Efficiency Design Index (EEDI), for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships.

Related Documents

- The United Nations System Delivering as One on Climate Change and Sustainable Development (brochure for UN Climate Summit 2014) (5.1 MB)
- MARPOL Annex VI energy efficiency amendments (Resolution MEPC.203(62)) (322 KB)
- Frequently Asked Questions about sulphur limits in emission control areas in 2015 (112 KB)

Related Links

- IMO work on GHG from international shipping

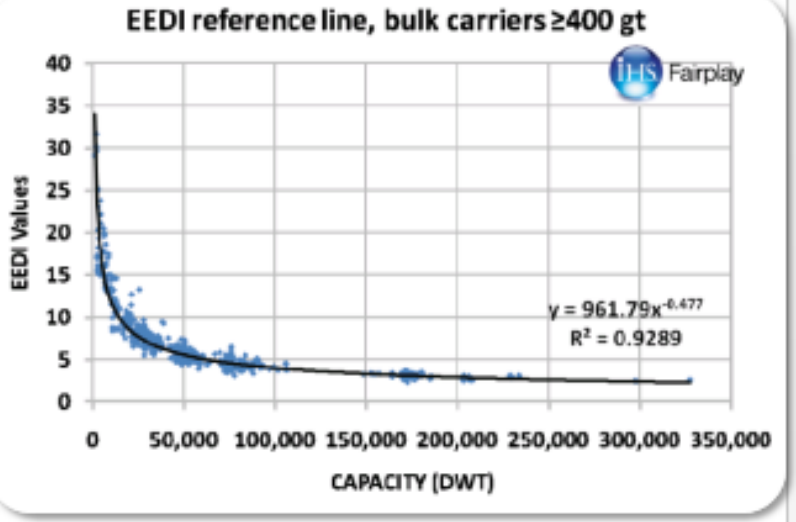
Target Years & Reduction Rates

Draft regulatory text for mandatory EEDI requirements: target years & reduction rates

Ship Type	Size	Phase 0 1 Jan 2013 – 31 Dec 2014	Phase 1 1 Jan 2015 – 31 Dec 2019	Phase 2 1 Jan 2020 – 31 Dec 2024	Phase 3 1 Jan 2025 onwards
Bulk Carrier	20,000 DWT and above	0	10	20	30
	10,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
Gas tanker	10,000 DWT and above	0	10	20	30
	2,000 – 10,000 DWT	n/a	0-10*	0-20*	0-30*
Tanker	20,000 DWT and above	0	10	20	30
	4,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
Container ship	15,000 DWT and above	0	10	20	30
	10,000 – 15,000 DWT	n/a	0-10*	0-20*	0-30*
General Cargo ships	15,000 DWT and above	0	10	15	30
	3,000 – 15,000 DWT	n/a	0-10*	0-15*	0-30*
Refrigerated cargo carrier	5,000 DWT and above	0	10	15	30
	3,000 – 5,000 DWT	n/a	0-10*	0-15*	0-30*
Combination carrier	20,000 DWT and above	0	10	20	30
	4,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*

$$EEDI_{attained} \leq EEDI_{required}$$

$$EEDI_{required} = \left(1 - \frac{X}{100}\right) \times Baseline\ value$$



** Factor to be linearly interpolated between two values dependent upon vessel size (the lower value of reduction factor is to be applied to the smaller ship size).*

Social Issues

Social Indicators

- Accident fatalities
- Onboard injuries
- Suicides
- Health of people working ashore (construction/ dismantling)
- Fair working conditions (e.g. ITF wage scale)
- Community economic enhancement: (e.g. shore based job generation

Safety Issue

The capsized cruise ship was hoisted out of the waters of the Yangtze river on Friday evening (5 June) and righted the following morning.
The death toll in the disaster stands at 434 following a thorough search of the raised ship over the weekend. Eight people are still missing, and authorities said they would search for bodies downriver more than 1,000km (600 miles) – as far as Shanghai.

Jan/2012 night Costa Concordia ran aground (Complacency ?)

April/2014 Passenger Sewol sank in Korean waters (Ship Handling Skill ?)

Sinking of the MV Sewol (South Korea)

16 April 2014

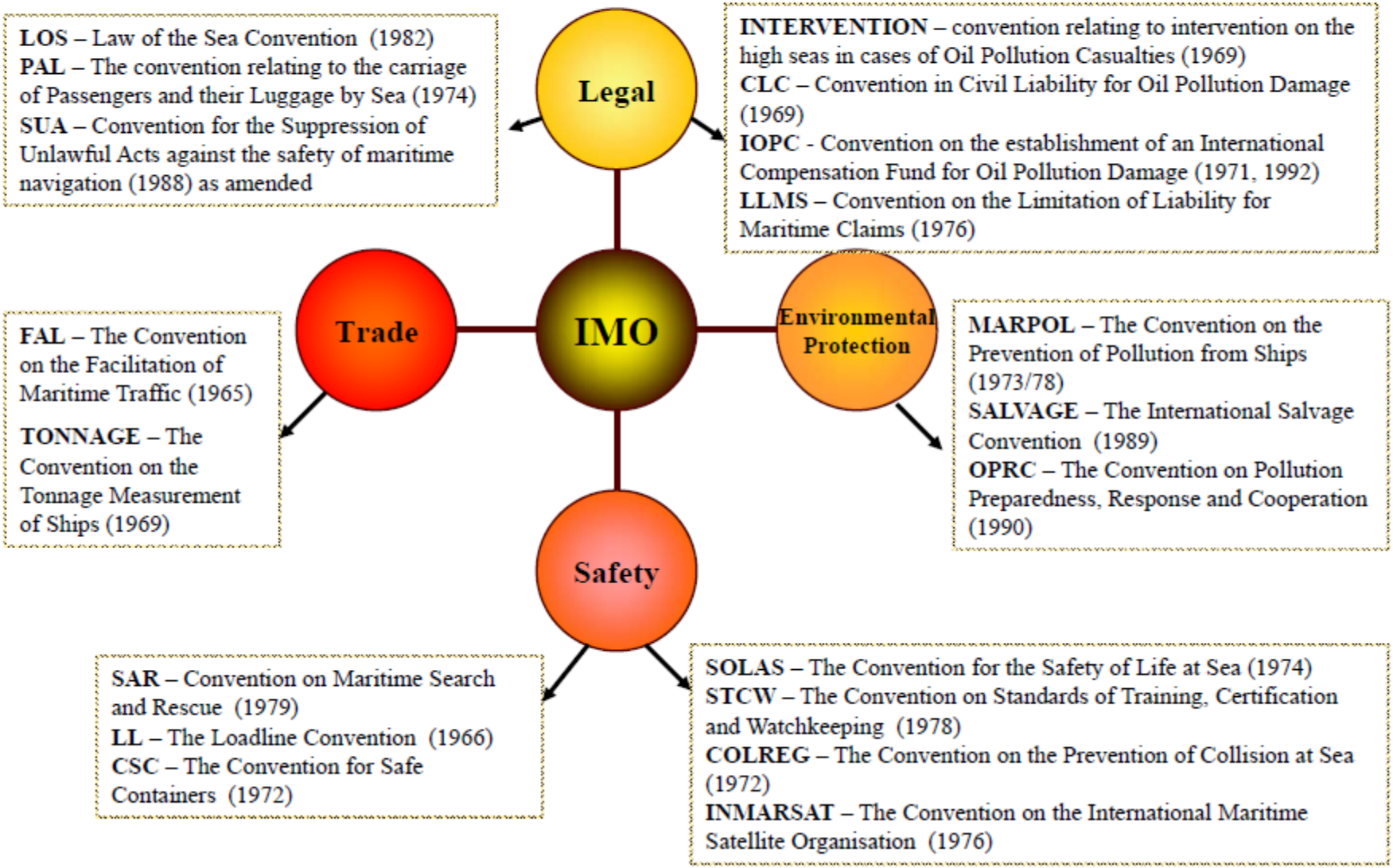
Ferry Accident in South Korea

Profile of the SEWOL Ferry	
Previous name	*Ferry Naminoue*
Birth place	*Japan*
Vessel age	*≥ 20 years*
Vessel type	*Car Ferry, one kind of Ro-Ro ships*
Owner	*Chonghaejin Marine Co.*
Modification	*Added many cabins which were built on the top floor of the ship, increasing passenger capacity and overloading the cargo*
Operation information	*Operated in Japan from 1994 to 2012*

On April 17, 2014, a huge ferry named SEWOL carrying 476 passengers and 150 vehicles sunk off the coast of South Korea with hundreds of high school students on board.

IMO Shipping Conventions

A summary:



Sustainable policy in the port sector

Air quality monitoring

Clean truck program

Wildlife habitat

Alternative maritime power

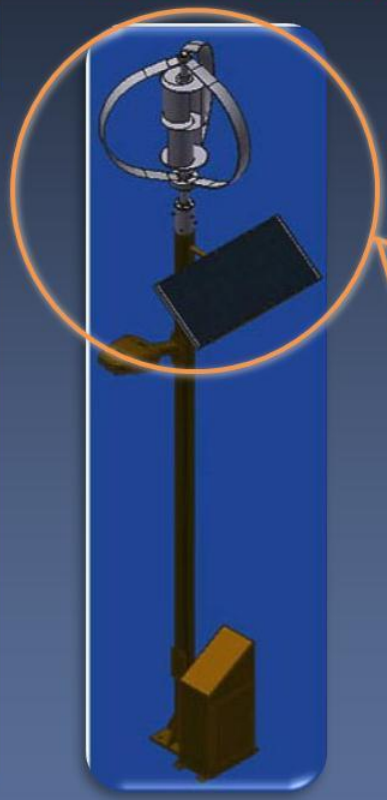
綠色碼頭 GREEN TERMINAL

複合式能源路燈

特色

- **發電能源**
  - 結合太陽能及風力發電照明
  - 實施範圍：行政區路燈
- **產生電量**
  - 產生7000度/年
  - 省下2.1萬元/年
- **減少二氧化碳排放量**
  - 每年減少4,388 kg

Solar and Wind Module



綠色碼頭 GREEN TERMINAL

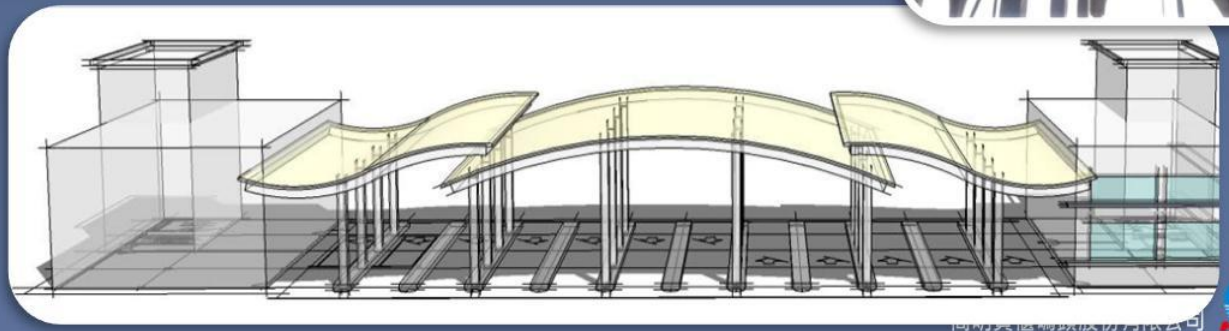
行政大樓

太陽能光電板

設備及效率
(行政大樓與管制站合計)

- **產生電量**
  - 產生17萬度/年
  - 省下51萬元/年
- 減少二氧化碳排放量
  - 減少108,120 kg/年

管制站



綠色碼頭 GREEN TERMINAL

岸電系統
(Alternative Maritime Power)

優點

- 使用岸電供給船上所需電力
  (關閉船上輔助發電機)
- 減少二氧化碳排放量
  - 每年減少470,000 kg
    (only YM vessels)

Strategic suggestions to improve sustainability
- safety climate

EDITION: HONG KONG | TUE APR 25, 2017 | JOBS | EVENTS | EDUCATION COURSES | NEWSLETTERS | 24° | REGISTER / LOGIN

South China Morning Post 南華早報

DOWNLOAD OUR ALL-NEW APP

HK CHINA ASIA WORLD COMMENT BUSINESS TECH LIFE CULTURE SPORT WEEK IN ASIA POST MAG STYLE .TV ALL

Refine Your Search

Search

Sort by ▸

Relevancy ▾

Timeline ▸

JAN 14 - APR 17

1999 2001 2003 2005 2007 2009 2011 2013 2015 2017

Sections ▸

- News (37)
- Magazines (21)
- Lifestyle (13)
- Comment (10)
- Culture (10)
- Business (5)
- Sport (5)
- Property (3)

Results 1 - 10 of 898 for "Chin shan Lu"

Search Results

Related topics matching your search

HK Magazine Archive (12), South China Sea (9), Treaty of Nanking (5), Occupy Central (4), Chinese language cinema (3), Hyundai (3), Myanmar's democratic transition (3), HSBC (2), Legislative Council elections 2016 (2), LIFE (2), Ma On Shan (2), National Education (2), Ngong Ping 360 (2), Now showing in Hong Kong (2), Old age allowance (2), Parallel trading (2), Sun Hung Kai Properties (2), Anson Chan (1), Apple (1), Asean (1),

Show more

ALL ARTICLES PHOTOS VIDEO

Business - Companies - MANAGEMENT

Safety first: building a 'safety climate' is key to avoiding marine accidents

Appeared in print as: More than just shelter in a storm

Posted Apr 21st 2017, 03:32pm by Lu Chin-shan

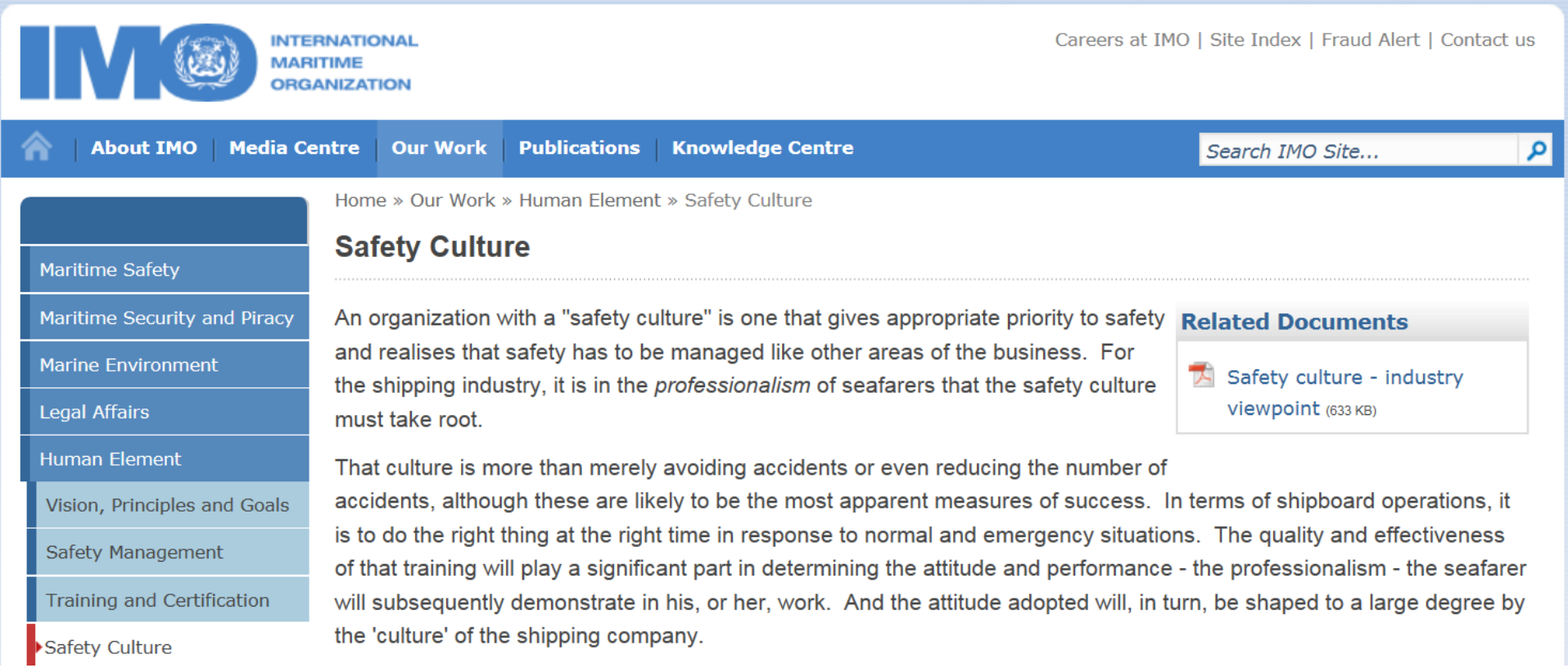
- Organizational safety climate refers to the coherent set of perceptions and expectations that employees have regarding safety in their organization. It is related to shared perceptions about organizational values, norms, beliefs, practices, and procedures. Research has shown that safety climate can help predict safety-related outcomes, such as fatalities or injuries.

Theoretical Background

- Theory of planned behavior (TPB)
- Theory of normative conduct (TNC)
- Social exchange theory
- Motivation theories

Efficient management must value safety climate

- The research shows that safety climate positively influences employees' safety behaviours. Shipping operators should precisely design their safety training programmes and provide incentives to encourage employees to participate in safety issues. Yet, the top management lacks safety commitment, the effectiveness of training and motivation will invariably decline. Policy makers should properly understand the value of safety climate versus the costs of casualties.


INTERNATIONAL MARITIME ORGANIZATION
Careers at IMO | Site Index | Fraud Alert | Contact us
About IMO | Media Centre | Our Work | Publications | Knowledge Centre
Search IMO Site...
Maritime Safety
Maritime Security and Piracy
Marine Environment
Legal Affairs
Human Element
Vision, Principles and Goals
Safety Management
Training and Certification
Safety Culture
Home » Our Work » Human Element » Safety Culture
Safety Culture
An organization with a "safety culture" is one that gives appropriate priority to safety and realises that safety has to be managed like other areas of the business. For the shipping industry, it is in the professionalism of seafarers that the safety culture must take root.
Related Documents
Safety culture - industry viewpoint (633 KB)
That culture is more than merely avoiding accidents or even reducing the number of accidents, although these are likely to be the most apparent measures of success. In terms of shipboard operations, it is to do the right thing at the right time in response to normal and emergency situations. The quality and effectiveness of that training will play a significant part in determining the attitude and performance - the professionalism - the seafarer will subsequently demonstrate in his, or her, work. And the attitude adopted will, in turn, be shaped to a large degree by the 'culture' of the shipping company.

Issued by the International Shipping Federation

ISF SPECIAL

Safety Culture

See back page: HOW CAN COMPANIES CHECK IF THEY ARE LOSING MONEY?

Safety culture is enlightened self interest

Safety culture is of interest to all senior decision makers in shipping companies, not only those with direct involvement in the day to day technical operation of their companies' ships, because improving safety saves money as well as lives.

In addition to ethical and social responsibilities, shipping companies practise a safety culture because:

- **Senior managers that cannot manage safety will be unlikely to manage a profitable shipping company**
- **A dedicated approach to safety is a cost saving not a cost**
- **Safety culture provides a means of maximising the benefits and cost savings that can be derived from implementing the ISM Code.**

HOW CAN A SAFETY CULTURE SAVE MONEY?

The following benefits have been derived by shipping companies from the conscious attempt to practise a safety culture:

- **reduction in lost employee hours**
- **reduction in hospital costs**
- **reduction in sick leave**
- **reduction in pollution costs**
- **reduction in cargo damage**
- **reduction in insurance premiums**

"The indirect costs of maritime accidents are estimated to be around 3 times the direct costs associated with injuries, deaths, property damage and oil spills."

FOCUS ON SAFETY CULTURE

Regulators, classification societies, the maritime press and IMO constantly refer to the need for ship operators to practise a safety culture. But what precisely do they mean?

Everyone agrees with the objectives of a safety culture - the reduction and elimination of accidents which involve injuries to ships' personnel and damage to property and the environment — but there can be some confusion as to what a safety culture really represents.

Experts commonly describe it as the values and practices that management and personnel share to ensure that risks are minimised and mitigated to the greatest degree possible. In short, this means that safety is always the first priority.

With a true safety culture, every crew member - whether a rating or a master - thinks about safety, and new ways of improving it, as matter of course.

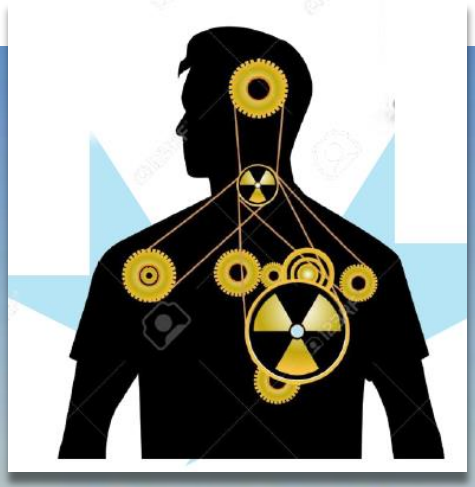
The cause of practically every unsafe incident can be traced to some form of human or organisational error. If people think about safety continuously, many accidents simply will not happen because virtually all so called "accidents" are in fact preventable.

The development of a safety culture does not lend itself to prescriptive rules, and the purpose of this leaflet is simply to encourage key people in shipping to consider how even more might be done to improve levels of maritime safety.

Although experts on the subject may talk in terms of psychology or behavioural change, the key to achieving a safety culture is:

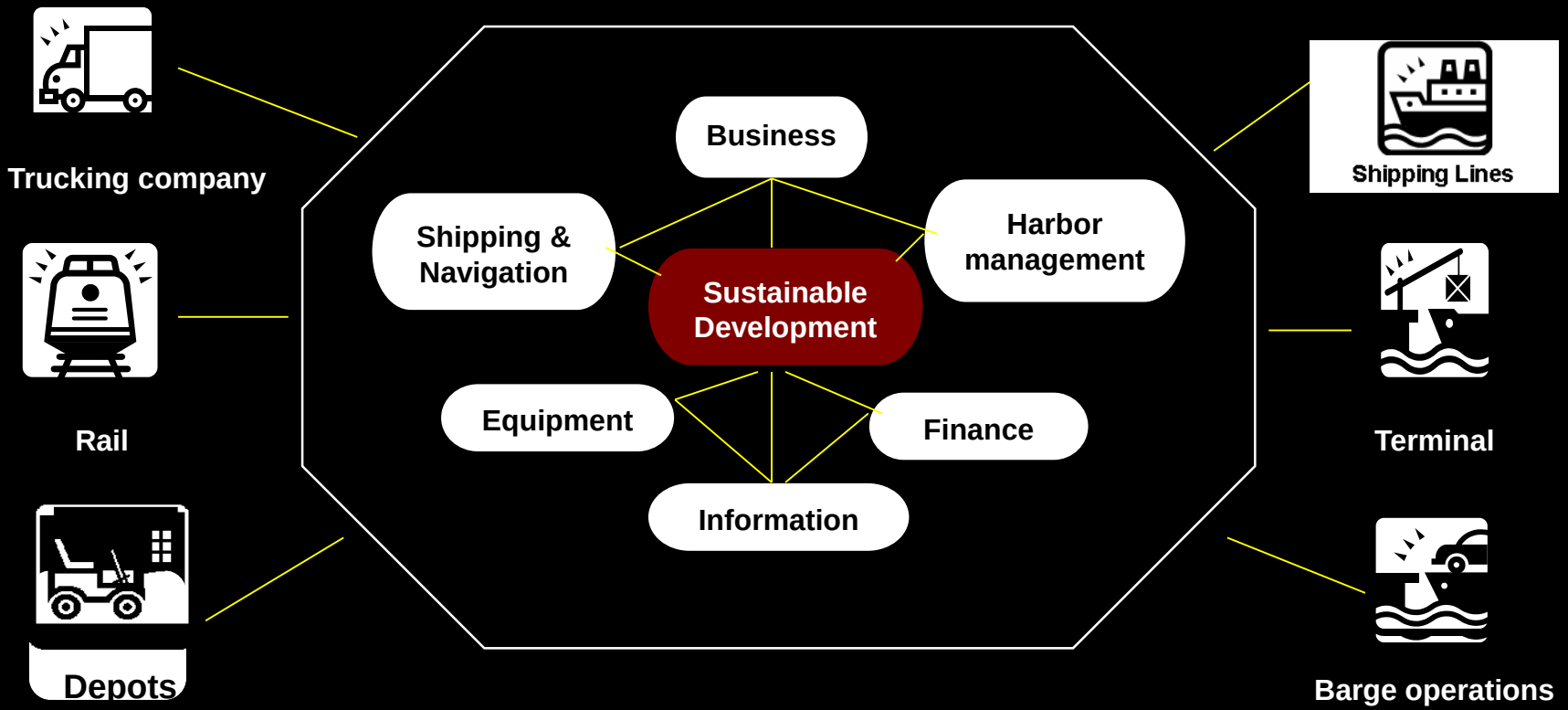
- **Recognising that all "accidents" are preventable and normally only occur following unsafe actions or a failure to follow correct procedures**
- **Constantly thinking safety and**
- **Always setting targets for continuous improvement.**

Strategic suggestions to improve sustainability - sustainable supply chain management



A Concept of Sustainable Supply Chain Management at Port

Supplier Collaboration Management | **Internal Sustainable Management** | **Customer Collaboration Management**



- Port-decision makers in sustainable management need to integrate external customers (i.e. carriers) and supply chain partners (i.e. terminal operators, truck companies, and stevedoring companies) and internal sustainable management to improve their sustainability performance.
- Port authorities should pay attention to setting sustainable development goals, having regulations and a clear organization of responsibility, and encouraging staff participation in training programs, in order to implement sustainable development.

Strategic suggestions to improve sustainability - organizational green climate

- Our empirical research found that each of the organizational green climate dimensions - green policy, green training, green motivation, and green communication – is essential for enhancing employees' green behaviors.
- These results are generalizable to other sectors (e.g. shipping companies, airlines, and manufacturers), they reinforce the criticality of an organizational green climate in environmental management.

The Conceptual Model

- Green Port Policy
- Green Training
- Green Communication
- Green Motivation

→ Employee Green Behavior

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

The effect of safety climate on seafarers' safety behaviors in container shipping

Chin-Shan Lu[a,*], Chaur-Luh Tsai[b,1]

[a] Department of Transportation and Communication Management Science, National Cheng Kung University, No. 1, University Road, Tainan City 701, Taiwan, ROC
[b] Department of Shipping Technology, National Kaohsiung Marine University, No. 482, Zhongzhou 3rd Road, Qijin District, Kaohsiung City 80543, Taiwan, ROC

Accident Analysis and Prevention 43 (2011) 329–341

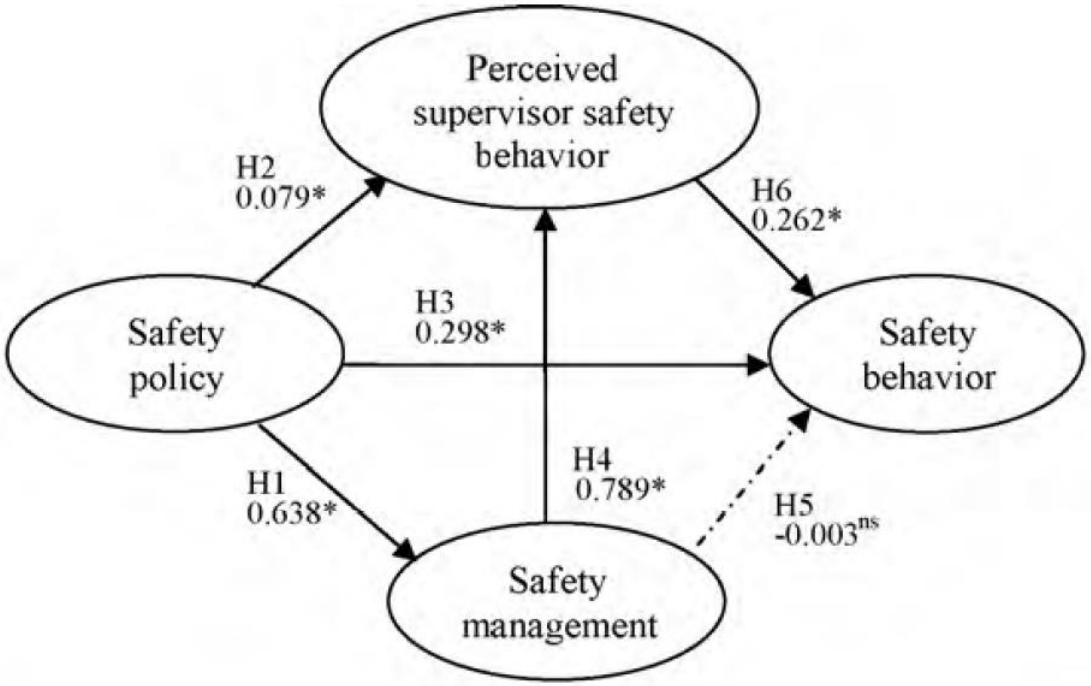
Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Safety climate and safety behavior in the passenger ferry context

Chin-Shan Lu*, Chung-Shan Yang[1]



Model fitness: χ^2/df=3.76; P<0.01; GFI=0.90; AGFI=0.87; CFI=0.94; TLI=0.93; RMR=0.022; RMSEA=0.067

J Bus Ethics (2014) 124:209–223
DOI 10.1007/s10551-013-1868-y

The Effects of Ethical Leadership and Ethical Climate on Employee Ethical Behavior in the International Port Context

Chin-Shan Lu · Chi-Chang Lin

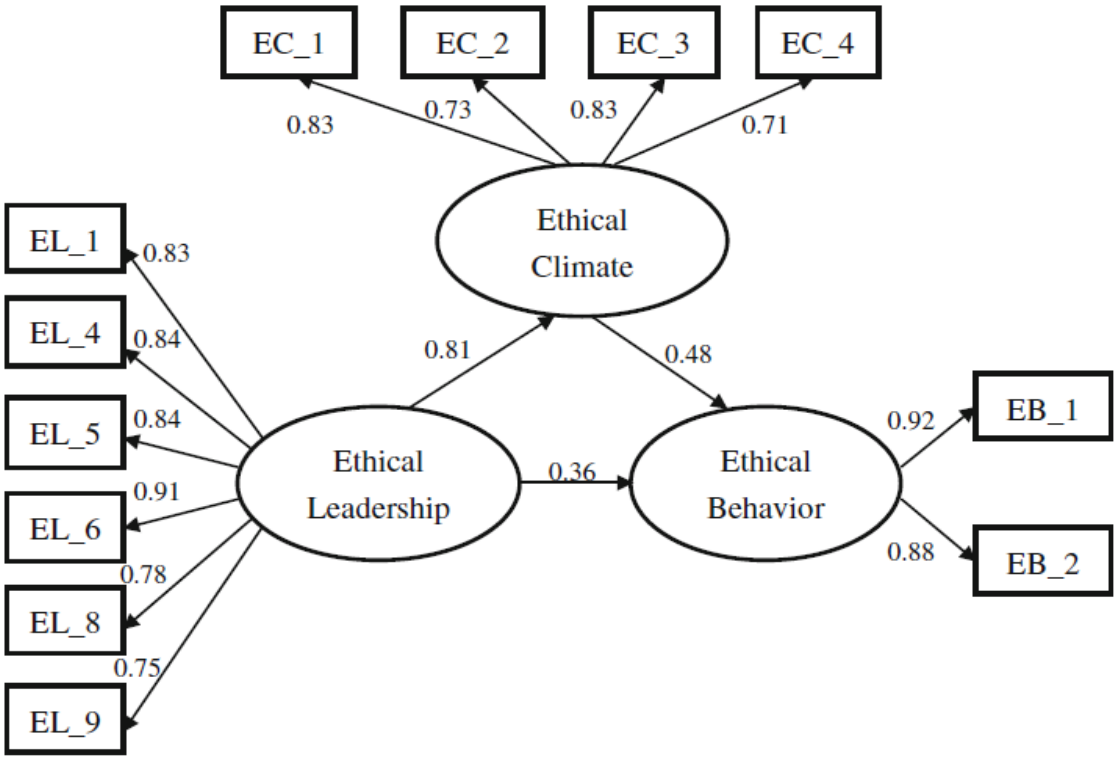


Fig. 2 Structural equation modeling results

Int. J. Shipping and Transport Logistics, Vol. 5, No. 6, 2013 591

Ethical leadership and ethical climate in the container shipping industry

Chin-Shan Lu*
Department of Logistics and Maritime Studies,
The Hong Kong Polytechnic University,
Hung Hom, Kowloon, Hong Kong
E-mail: luchinshan1@gmail.com
*Corresponding author

Szu-Yu Kuo and Yi-Tai Chiu
Department of Transportation and
Communication Management Science,
National Cheng Kung University,

Table 2 Factor analysis of the ethical leadership, ethical climate, and ethical behavior attributes

Item	Factor Loading
Ethical leadership	
(Means = 3.61; percentage variance % = 68.03; Cronbach α = 0.95)	
My supervisor can be trusted	0.892
My supervisor discusses business ethics or values with employees	0.864
My supervisor makes fair and balanced decisions	0.846
My supervisor has the best interests of employees in mind	0.843
My supervisor sets an example of how to do things the right way in terms of ethics	0.838
My supervisor defines success not just by results but also by the way they are obtained	0.830
My supervisor asks: "what is the right thing to do?" when making decisions	0.817
My supervisor conducts his/her personal life in an ethical manner	0.816
My supervisor listens to what employees have to say	0.790
My supervisor disciplines employees who violate ethical standards	0.699
Ethical climate	
Rules and policies (means = 3.80; percentage variance % = 45.48; Cronbach α = 0.85)	
Employees comply with the company's ethical instruction when contacting customers	0.747
The most efficient manner for finishing work is to "do the right thing"	0.742
Employees take care of each other in the company	0.738
Employees strictly obey the company's policies	0.644
The major concern is always to do what is best for the other person	0.635
Successful employees in this company go by the book	0.610
Independence (means = 3.45; percentage variance % = 10.01; Cronbach α = 0.83)	
Employees can decide for themselves what is right and wrong	0.821
Employees are expected to follow their own personal and moral beliefs	0.805
Employees are guided by their own independence	0.693
Employees' opinions are valued	0.640
The law and professional standards (means = 4.09; percentage variance % = 7.98; Cronbach α = 0.85)	
Employees are expected to strictly follow legal or professional standards	0.881
Employees are expected to comply with the law and professional standards over and above other considerations	0.815
The law or ethical code of their profession is the major consideration	0.699
Caring (means = 3.32; percentage variance % = 7.12 Cronbach α = 0.92)	
The most important concern is the good of all the people as a whole	0.870
What is best for everyone is the major consideration here	0.836
Ethical behavior	
Normative ethical behavior (means = 3.48; percentage variance % = 60.58; Cronbach α = 0.94)	
I think my peers do not pass blame for errors on to an innocent co-worker	0.872
I think my peers do not claim credit for someone else's work	0.815
I think my peers do not use company services for personal use	0.806
I think my peers do not conceal personal errors	0.802
I think my peers do not conduct personal business in company time	0.707
I think my peers do not give gifts/favors in exchange for preferential treatment	0.655
I think my peers do not divulge confidential information	0.644
I think my peers do not take longer than necessary to do a job	0.636
I think my peers do not report others' violations of company policies and rules	0.595
I think my peers do not authorize a subordinate to violate company rules	0.509
Juridical ethical behavior (means = 3.86; percentage variance % = 6.80; Cronbach α = 0.89)	
I think my peers do not pilfer company materials and supplies	0.785
I think my peers do not pad out an expense account more than 10 %	0.772
I think my peers do not call in sick to take a day off	0.767
I think my peers do not accept gifts/favors in exchange for preferential treatment	0.751
I think my peers do not take extra personal time (lunch hour, breaks, early departure)	0.676
I think my peers do not falsify time/quality/quantity reports	0.643


Thanks for your listening