

經濟部推動綠色貿易產業學程B-2 「綠色節能減碳物流管理」

李柏峰

美國供應鏈管理專業協會(CSCMP)台灣圓桌會 會長

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簡報大綱

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- 五.如何綠化你的物流與供應鏈



一. 全球氣候變遷的挑戰

- 低碳與綠色環境永續管理的迫切性



Global Warming(全球暖化) 是過去10年全球最常用的字彙

全球暖化(Global Warming) 和恐怖主義不只改變人類過去10年的生活，在語言上也產生重大影響。根據全球語言監督組織（Global Language Monitor）的統計，「全球暖化」（global warming）和「911」（9/11）分占2000年代使用次數最多字彙的前兩名，美國首位黑人總統「歐巴馬」（Obama）排名第三。

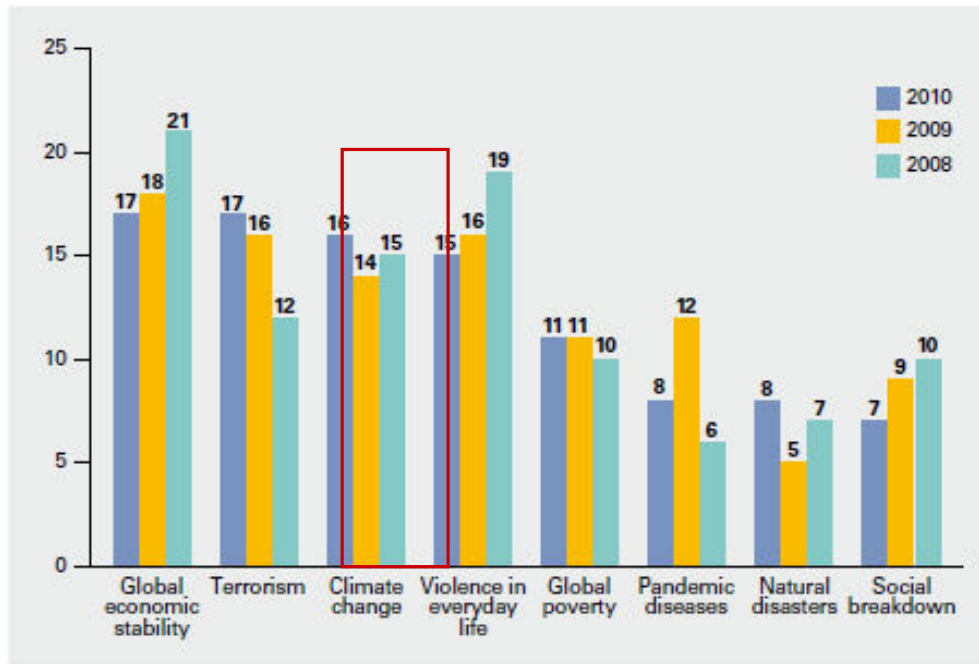
過去10年常用字彙

1	global warming	全球暖化
2	9/11	911恐怖攻擊
3	Obama	歐巴馬
4	bailout	紓困
5	evacuee	被疏散者
6	derivative	衍生性商品
7	google	谷歌
8	surge	激增
9	Chingish	中式英文
10	tsunami	海嘯

資料來源/全球語言監督機構 譯表/田恩怡
■ 聯合報

氣候變遷一直是全球最關切的議題

Climate Change is consistently a top concern globally

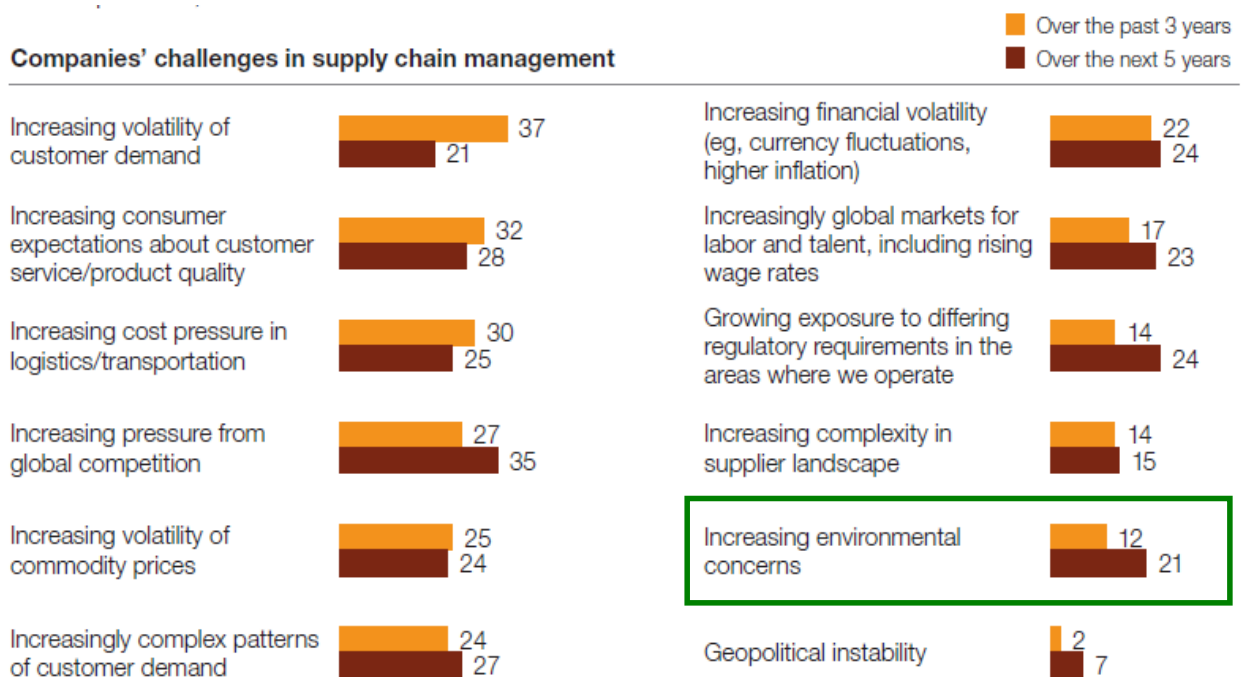


Source: HSBC's Climate Confidence Monitor, 2010

Climate change as a top concern 2008-2010. Global percentage ranking each issue as their top concern.

供應鏈管理的最新發展挑戰

New Supply Chain Challenges Lie Ahead



Managing global supply chains: McKinsey Global Survey, 2010

2010 Among Hottest Years on Record



The World Meteorological Organization (WMO) says the past decade has been the warmest since records began in 1850. Global weather records show 2010 has been the hottest year the world has experienced since 2005 and is likely to finish as the third hottest since records began. it has been a year of extremes in 2010:

Pakistan experienced its worst ever floods, there were severe floods and deadly landslides in China, and Russia and Eurasia suffered through extreme heat waves.

It was also the driest monsoon season in Bangladesh since 1994, the coldest winter for Ireland and Scotland since the 60s and Canada's warmest, driest winter ever....,

The evidence that we've got in already shows that a lot of cities, possibly a record number of locations, have broken their warm temperature records.

The (WMO) says the combined sea-surface and land-surface air temperature has been more than half of one degree warmer this year than the annual average recorded from the 1960s to the 90s. "The hottest years so far were 1998 in the record and 2005 and 2010 will probably rank alongside those.

"Most climate scientists that I know are quite alarmed by the results that we are seeing now. Dec 3, 2010 (Environmental Leader)

氣候更極端「全球怪天」氣象新名詞

進入2011年後，全球異常天災頻傳，不是嚴重乾旱，就是水患成災，龍捲風也是一個跟著一個來，地球氣候往「極乾」跟「極溼」兩端發展，繼「全球」成為氣象專有名詞之後，專家也為最近這種氣候異常現象，創造出新名詞，就叫做「**全球怪天**」(Global Weirding)。

2011年上半年，異常天候一個接著一個來，昆士蘭淹大水，美國亞利桑那州野火燎原，中國大陸還出現了「**北乾旱，南淹水**」的雙天災，不管那個地方，全球氣候都亂了套。

根據統計，**最近幾年，每年平均都出現350起的天災，幾乎是30年前的3倍之多**，不是「太乾」，就是「太濕」，不是「極冷」，就是「極熱」。自從「全球暖化」後，氣象專家又發明了一個新名詞，把這種氣候異常稱為「**全球怪天**」(Global Weirding)。

全球暖化效應長期累積下來，導致海洋溫度不斷上升，蒸發出更多的水氣，讓部分地區雨量異常增多，因而釀成，有些地方則形成比以往還要乾燥的氣候，像是大陸洞庭湖都已經乾涸見底，這也是因為暖化效應作祟。

氣候專家：「全球暖化的多餘熱能，讓乾旱現象更為普遍。」如果暖化問題沒有獲得舒緩，地球生態將會惡性循環，像這種怪異天災恐怕將更加常態，而且摧毀力，恐怕會越來越強。

氣候變遷已造成全球經濟重大損失



- 大量溫室氣體排放，已造成逐年嚴重的氣候災害!
- 2005年全球氣候災害造成的經濟損失高達2,040億,是1998年的兩倍。同時,保險損失金額也高達920億,創有史以來新高!
- 2005年8月29日,卡翠納颶風重創路易斯安那州,造成一千五百多人罹難及高達一千億美元的慘重損失。這是美國有史以來最嚴重的天災。
- 台灣颱風和水災保險的損失,從2003年2,700萬,大幅提高到2005年12.67億,約為2003年的47倍!
- 2009年莫拉克颱風,在兩天內下了台灣一年的平均雨量2,000公厘,重創台灣!
- 2010年冰島火山大爆發,中斷歐洲與世界各國空中交通,重創全球供應鏈。
- 2011年10月泰國空前水災,造成全球汽車與電腦資訊產品供應鏈斷鏈。
- 英國官方估計地球暖化,造成全球經濟損失高達232兆。
- 如果全球暖化現象未獲改善,使氣候異常成為常態,將對全球經濟產生嚴重影響—「因為全球有五分之四的經濟行為都與氣候相關。」《氣候經濟學》作者Friedhelm Schwarz一語道破氣候變遷對經濟活動的重大影響。



The UNEP Emissions Gap Report

This assessment addresses four main questions:

- What 2020 emission levels are consistent with the 2° C and 1.5° C limits⁴?
- What are the expected global emissions in 2020?
- How big is the “emissions gap”?
- How can the gap be reduced?

World GHG Emissions Hit Record Level



Greenhouse gas emissions reached their highest point ever last year, making it “extremely challenging” to prevent global temperature rising to dangerous levels, the International Energy Agency said this weekend.

The IEA said that 30.6 gigatons of carbon dioxide were emitted in 2010, up five percent from 2008's level of 29.3 Gt.

This increase means world leaders will struggle to keep to their goal of preventing a temperature rise of more than two degrees Celsius, described by many scientists as the threshold to potentially dangerous climate change, IEA said. **The two degree limit was agreed at UN climate change talks in Cancun last year.**

“I am very worried. This is the worst news on emissions,” IEA told the Guardian. “It is becoming extremely challenging to remain below two degrees. The prospect is getting bleaker. That is what the numbers say.” **But government action could still prevent disaster. “If we have bold, decisive and urgent action, very soon, we still have a chance of succeeding,”.**

The IEA says that for a two degree increase to be averted, global energy-related emissions in 2020 must not be greater than 32 Gt. This means that over the whole of the next decade, emissions must rise by less than they did between 2009 and 2010.

May 31, 2011

2012氣候變遷績效指標 台灣排名微幅退步

/ 國際環保團體日前發表「2012年氣候變遷績效指標」(Climate Change Performance Index Results 2012, CCPI 2012)，針對58個受評比國家部門別溫室氣體排放趨勢、排放程度及氣候政策等三大面向進行評比，我國今年整體得分為49.0分，較前一年50.2分微幅降低1.2分，總排名第50名較去年降低3名。

另根據同步發表的「2012年全球氣候變遷風險指標」(Global Climate Risk Index 2012)，評估我國易受極端氣候如洪水、暴風的衝擊影響，列為190個評比國家之第44名，屬於容易遭受天然災害風險之前25%。

以溫室氣體排放趨勢、排放程度及氣候政策三大面向進行評析，分別退後1名及進步2名，氣候政策面向(國際政策、國內政策)則表現較為弱勢。環保署解釋，這主要是我國溫室氣減量法尚未通過，以致氣候政策面向分數降低。

針對2012年「全球氣候變遷風險指標」評估我國易受極端氣候如洪水、暴風的衝擊影響，列為190個評比國家之第44名，屬於容易遭受天然災害風險之前25%；環保署表示，這顯見我國地理環境位置所面對的高風險及脆弱度，更須正視全球氣候變遷與暖化所帶來之重大挑戰。

環保署指出，目前正積極推動溫室氣體減量法立法作業，並陸續完成建立溫室氣體先期減量相關政策，如先期暨抵換專案、認證與查驗機構及查驗人員管理機制、由環境影響評估法監督，規範開發單位依循規定取得減量額度及登錄平台等配套措施，未來法案通過後，相關政策可以順利銜接。

另外，我國碳密集度自2009年的0.0187kg CO₂/元降至2010年的0.0179kg CO₂/元；2009年的排碳總量亦較2007年為低，顯示經濟成長與溫室氣體排放呈現脫鉤現象。環境資訊中心－2011年12月8日

二.綠色與環境永續管理國際規範

京都議定書(Kyoto Protocol)

京都議定書(Kyoto Protocol)是《聯合國氣候變化綱要公約》(United Nations Framework Convention on Climate Change, UNFCCC--聯合國氣候變化框架公約)的補充條款。

聯合國氣候變化綱要公約第三次締約國大會於1997年12月1日至11日於日本京都舉行，其目標是「將大氣中的溫室氣體含量穩定在一個適當的水平，進而防止劇烈的氣候改變對人類造成傷害」[會中通過具有管制效力的「京都議定書」(1/CP.3)，議定書的全文共28條及A、B兩個附件，主要內容為：

- **一、減量時程與目標：**

公約附件一國家及摩洛哥與列支敦斯登，應於2008至2012年間達成減量目標，同時採差異性削減目標之方式：歐洲聯盟及東歐各國8%、美國7%、日本、加拿大、匈牙利、波蘭6%...

- **二、管制六種溫室氣體：**

其中CO₂、CH₄、N₂O管制基準年為1990年，而HFCs、PFCs與SF₆為1995年。制定「共同執行」、「清潔發展機制」、及「排放交易」等三種彈性機制。森林吸收溫室氣體之功能納入減量計算，即1990年以後所進行之植林、再植林及砍伐森林所造成之溫室氣體吸收或排放之淨值，可計算於減量之中。

2009哥本哈根氣候變遷會議(COP15)

They won't likely deliver a new global treaty on global warming,
but the decisions made here may still change our lives.



哥本哈根會議 主要國家減碳目標

	目標	算計
美國	2020年較2005年水準減排17%。	換算成多數國家採用的1990年水準，美國目標僅減排4%，遠低於歐盟的20%。
中國	到2020年，較2005年的每單位GDP減排40%至45%。	中國的減排基礎是「每單位GDP碳排放」，但到了2020年中國GDP已大幅增長，總碳排放量實際上可能不減反增。
歐盟	到2020年較1990年水準減排20%。	歐盟的綠能產業領先全球，積極提倡綠能有利自己荷包。
日本	到2020年較1990年水準減排25%。	前提是其他主要排放國也同意類似減排目標，否則日本可能調降目標。
俄羅斯	2020年減排25%。	條件是其他國家也接受這個目標。
印度	到2020年較2005年每單位GDP減排最高25%。	與中國採取同樣策略，以每單位GDP為減排基礎，且強調不具法律約束力，卻要求富國的減排目標具有法律約束力。

資料來源／綜合外電 製表／田思怡

■聯合報

2010墨西哥坎昆氣候變遷會議

CANCUN COP16 (Conference of the Parties of the United Nations Framework Convention on Climate Change)



坎昆會議成功，象徵「氣候變遷國際合作新紀元」

坎昆協議要點

- 成立綠色氣候基金，由已開發國家每年捐1,000億美元協助開發中國家取得乾潔能源科技。
- 提供資金幫助窮國保護雨林。
- 成立科技執行委員會，分析移轉潔淨能源技術給窮國的需求與政策。
- 將哥本哈根協議中80多國的自願減排目標寫入聯合國文件。
- 強化檢討開發中與已開發國家的減排行動，以確保減排成效。

資料來源：美聯社

謝瓊竹 / 製表



COP17/CMP7
UNITED NATIONS
CLIMATE CHANGE CONFERENCE 2011
DURBAN, SOUTH AFRICA

Working Together
Saving Tomorrow Today
28 November - 9 December 2011



德班氣候會談共識

● 延長京都議定書

延長京都議定書的承諾期，從第一階段的2008年至2012年底，延長到2013年1月1日至2017年底。

● 制定法律架構

2015年開始協商具有法律約束力的新公約，2020年時生效。圖/經濟日報提供

● 減碳企圖心

在發展新法律工具時，提高減排溫室氣體的企圖心。

● 強化透明度

利用新操作安排，讓已開發和開發中國家管理溫室氣體排放行動更透明。

● 提供財務支持

設計綠色氣候基金，在2020年前每年集資1,000億美元，協助貧窮國家。

● 碳捕捉與封存 (CSS)

將強迫計畫開發商存放5%碳權，並在抵減量有效期結束20年後，由監控機關證明其地下存放處均未洩露二氧化碳後，才授予這5%碳權。

● 減少森林伐除與退化導致的碳排放 (REDD)

考慮以民間資金與以市場為基礎的機制，提供REDD計畫資金，為數十億美元的民間投資鋪路。

資料來源：路透

簡國帆 / 製表

各國決議延長《京都議定書》期限

作者：謝雯凱(低碳生活部落格德班氣候大會特派員) 在延會兩天後，齊聚南非德班參與氣候會議的各國代表，於南非時間11日凌晨五點達成協議，將原訂於2012年到期的《京都議定書》，延長法律效力5年，但詳細時程以及個別國家是否需有法定的減碳目標，將留待明年討論。各國也決議整合暨有的特別工作組談判框架，由新成立的「德班行動平台(Durban Platform for Enhanced Action)」繼續執行協調談判工作，中國大陸與美國兩大溫室氣體排放源，也都將會參與此一平台的運作。

主要的關鍵在於，文本中決定京都議定書第二承諾期由2013年至2017年，為期五年，文中目標重申2020年前降低溫室氣體排放較1990年低20-40%的標準，缺乏更進一步承諾的企圖。而歐盟提出另一個版本，期望延長第二承諾期到2020年，以銜接所謂約束各國的新國際協議，然而以8年期間來減少原本預期5年減少的量，勢必更為容易。

公約秘書長菲格雷斯 (Christiana Figueres) 在Twitter上為此結果感到雀躍，她寫到：「我們有了京都第二承諾期，並在未來邁向對全體均有法律約束力(的協議)；坎昆協議中的綠色氣候基金則全面實施。」而儘管氣候體制邁向新局，但這一步「仍然不足，必須持續提高企圖心」。

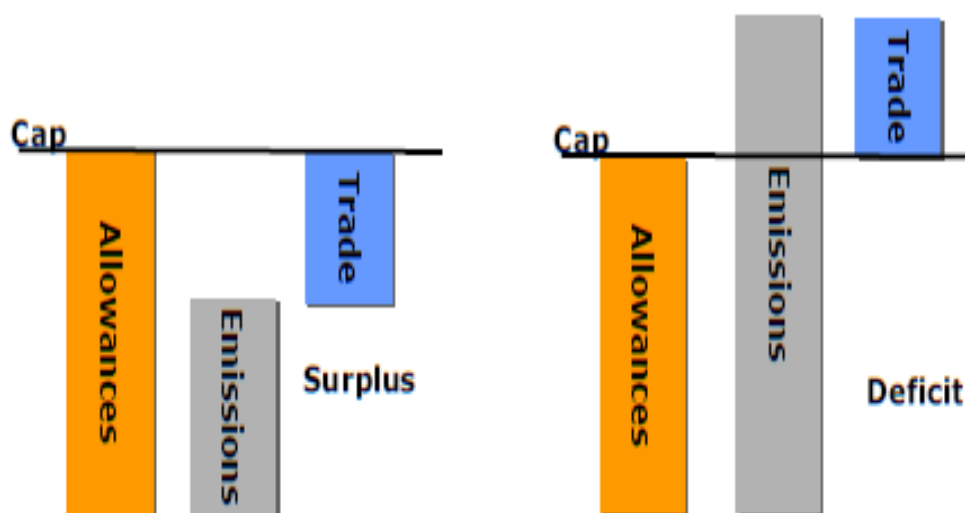
2015減碳新協議 美中印度加入

各國部長十二月十一日在南非德班召開的聯合國氣候變遷會議上，討論熱烈。在南非德班舉行的聯合國氣候變遷會議，十一日在正式會議結束的兩天後終於達成協議，與會的一百九十四國代表同意歐盟提出的締結減碳新條約「路線圖」，在二〇一五年達成具有法律約束力的新條約，強制要求包含美國、中國大陸和印度在內的所有污染國家減少碳排放。這是氣候變遷會議努力十七年後，首度同意以單一國際條約約束所有污染大國的碳排放，這項稱為「德班加強行動綱領」的路線圖，將自明年展開協商，二〇一五年達成條約，二〇二〇年執行。

一九九七年的京都議定書，僅已開發國家的碳排放受法律約束。第一階段明年屆滿後將延長五年。與會國家並同意在二〇二〇年之前成立「綠色氣候基金會」，每年提供一千億美元協助窮國對抗氣候變遷，但尚未就如何集資達成協議。為期十二天的正式會議結束後，又進行近七十二小時馬拉松會談，打破會議延長時間紀錄。爭執點在於印度和大陸等污染大國堅持不受法律約束。由歐盟、小島國家聯盟和低度開發國家集團提出的「路線圖」，主張唯有締結以法律約束所有國家的新條約，才能將自工業革命以來的全球氣溫升高控制在攝氏兩度以下。巴西、南非、印度和大陸反對。印度環境部長納塔拉姜激動地說：「西方國家未達到承諾的減排目標，為何要求窮國為他們減排？」大陸代表團團長解振華更氣得發抖，譴責已開發國家：「要我們做你們不做的事，我們要看到你們的實質行動。」兩國最終不情願地妥協。/聯合報

碳排放限制與交易法案（Cap-and-Trade）

Cap and Trade Carbon Markets



欧盟碳排放交易計畫 (EU ETS)

EU ETS(Emission Trading Scheme)目前在30个国家运作(欧盟的27个成员国和冰岛，列支敦士登和挪威)，已经有约12,000个工厂和电厂加入，其目标是使2020年的排放水平比2005年低21%。在其严格的体系之下，**航空业将在2012年加入**，并有可能在2013年继续拓展至石油化工业，制氮和制铝业，以及其他能源行业。

欧盟航空ETS的机制，根据航空公司在2004-2006年平均排放水平的97%来为2012年设限，2013年将降至95%。而航空公司需要购买此限制许可的15%，其余部分将根据飞机2010年每公里承载的重量免费分配。所有在欧盟机场起飞和到达的航班都将适用此规定。

2012年航空公司必须参与欧盟ETS交易，以保证到2013年能够分配到足够排放配额，否则将面临巨额罚款，甚至被强迫停航。

Calif. Board Finalizes Cap-and-Trade

The California Air Resources Board yesterday gave its final approval to the state's cap-and-trade system, which sets limits on carbon emissions starting next year. CARB unanimously approved details of the regulations over the objections of industry groups, the San Francisco Chronicle reported, with the board's major actions focusing on the allocation of carbon allowances.

Under the plan approved yesterday, the state will limit carbon emissions from its 350 or so biggest emitters starting in 2012, with enforcement starting in 2013. The carbon cap will drop every year until 2020. Over this time, CARB expects the program to prevent 273 million metric tons of carbon emissions.

The regulations will cover electric utilities and large industrial plants first, later expanding to cover fuel distributors. Each company covered by the program will need to hold allowances for carbon that they emit over the cap, and companies will be able to trade these allowances in the marketplace. **This will create the world's second-largest carbon market behind that of the EU, with about \$10 billion in allowances traded by 2016,** according to the Los Angeles Times.

Initially 90 percent of allowances will be free, with companies needing to buy the other 10 percent. From there some industries will see the percentage of free allowances drop to about 30 percent. Emitters will also be able to meet up to eight percent of their required emissions reductions through carbon offsets. October 20, 2011.

澳洲開徵碳稅 鎖定500汙染大戶

澳洲參議院2011/11/08通過清潔能源法案，明(2012)年7月1日起將對全國500大汙染企業課徵碳稅。儘管企業界極力反對，澳洲政府表示，這是為了控制氣候變遷，必須採取的歷史性創舉。在野黨矢言下次大選若能完成政黨輪替，一定會廢除碳稅。根據法案，汙染企業每排出1公噸的碳就必須支付23澳元（約台幣716元）的碳稅，預計3年內替國庫增加245億澳元（約台幣7630億元）進帳，2015年起採浮動稅率。澳洲一般家庭每周生活費將因此增加10澳元，政府表示將補助中低收入戶，另投資130億澳元（約台幣4050億元）發展太陽能等潔淨能源。

澳洲由於煤產量豐富，燃煤和天然氣占總發電量的九成，而且是全世界人均排碳量數一數二的國家。法案設定在2020年前將全國碳排量降到比2000年還低5%的目標，減少了1億6000萬公噸，相當於減少4500萬輛汽車。開徵碳稅是理想，但面臨企業強烈反彈。吉拉德的前任陸克文就是因為背棄競選承諾，去年遭到工黨同志逼宮，黯然將總理大位交給吉拉德。吉拉德在去年競選期間保證不推動碳稅，但後來表示碳稅是澳洲的最佳選擇。她說：「我們改寫了歷史，這是澳洲子孫的勝利，也是想要靠潔淨能源賺錢、想生活在乾淨環境的人士的勝利。」批評者說，碳稅這麼高，將使澳洲企業失去競爭力。澳洲金融評論報8日報導，由於碳價跌到4年來的新低，目前歐洲企業的碳稅每公噸約8.7至12.6澳元（台幣271至393元）。目前全球只有紐西蘭及歐盟，針對碳排減量採取「排汙交易制」。【2011/11/09 聯合報】

大陸四年內徵碳稅

中國國家主席胡錦濤前天出席聯合國氣候變遷峰會時，具體承諾中國將大幅減低二氧化碳排放量，並將氣候問題納入經濟計畫之中，爭取在2020年前，每單位GDP（國內生產毛額）二氧化碳排放量，能比2005年有顯著下降。大陸財政部財政科學研究首度提出建議，在2012年到2013年之間開徵「碳稅」，初期採每噸碳徵人民幣10元（約新台幣47元）的低稅率，未來再視中國社會經濟發展情況逐步調升稅率。

大陸財政部財政科學研究所昨（23）日就在中國網上公布關於開徵「碳稅」的專題報告。中國此舉無疑將對美國造成壓力。美國不久前才把碳交易立法推遲到2010年之後，而中國已率先具體提出如何減少二氧化碳排放的規畫。大陸財政部在這項研究報告中指出，中國將從今年起進行燃油稅與資源稅的改革，在資源稅改革後一到三年，也就是2012到2013年間，擇機開徵碳稅；預計在2014年或是之後，再進一步開徵「環境稅」。

所謂的碳稅，主要針對會排放二氧化碳的化石燃料，包括煤炭、天然氣、成品油等，所有使用這些化石燃料、向自然環境排放二氧化碳的個人或企業都是「納稅人」。

報告稱，開徵碳稅對於身為全球少數以煤炭作為主要能源的中國而言，有利於樹立負責的國際形象。開徵碳稅還有助於中國轉變經濟發展方式，以及日後建構「環境稅」。

至於最關鍵的稅率問題，為降低碳稅政策對經濟帶來的衝擊，報告建議採取「初期開徵低稅率碳稅」的策略，如每噸二氧化碳僅課徵人民幣10元，以降低納稅人負擔，未來再視情況逐步提高稅率。

【經濟日報報導】 2009.12

“十二五” 倡导低碳绿色经济，强化节能环保

2010-12-30 来源:现代物流报(2010年12月)一年一度的中央经济工作会议胜利闭幕。作为判断当前经济形势和定调明年宏观经济政策的风向标,它提出了加强和改善宏观调控,推进发展现代农业,加快经济结构战略性调整,完善基本公共服务,加大改革攻坚力度,推动经济发展方式转变等六项经济工作任务。作为新兴产业的现代物流业,中央经济工作会议也明确传递出了今后的发展精神,那就是加快物流企业兼并重组,提升现代物流业服务能力;大力发展现代农业,促发展保民生;**倡导低碳绿色经济,强化节能环保。**

会议提出,要加快壮大服务业规模,全面提高现代服务业发展水平。而现代物流业作为重要的生产性服务业,它的发展不仅能够有效节约资源、能源,还能增加就业和劳动者收入,真正服务和改善民生。会议的召开和即将颁布的“十二五”规划必将给以现代物流业为代表的现代服务业提供强劲的动力,多元化的市场需求和多领域的发展空间。

会议重点提出要大力发展现代农业,搞好市场流通体系建设。而早在2005年商务部就开始组织“万村千乡市场工程”,积极探索健康、可持续发展的农村现代流通服务之路,而以供销合作社系统为主体的“新网物流”工程无疑为现代物流业发力农村市场作出了很好的表率。随着农村经济的不断发展和市场需求的差异化、多样化,由此产生的运输、储存、包装、流通加工、配送、信息处理等功能和要素促使物流企业全面介入。尤其需要有实力和能力的供应链整合企业的积极参与,大力发展与现代农业密切相关的现代粮食物流、农产品冷链物流等物流形态,并积极开展粮食、食油仓储设施,农业物流公共信息平台建设,以及农产品批发市场升级改造等。这不但要实现从企业物流到物流企业的转变,更要孕育一批规范化、系统化、专业化的物流企业。

强化节能减排,大力发展绿色经济;加快低碳技术研发应用,大力发展循环经济和环保产业成了会议的又一主题。而现代物流业不仅可以有效获取、分配和使用运输、仓储、包装、配送等物流要素,提高各种生产要素和产成品效率,降低能源消耗,还可以降低碳排放,推动资源节约型和环境友好型社会建设。对于人均能源资源严重不足而能源需求持续增长的我国来说,大力发展现代物流业无疑更具有战略性意义。

7省市试点碳交易 或征区域性碳税

国家发改委日前宣布,同意北京市、天津市、上海市、重庆市、湖北省、广东省及深圳市开展碳排放权交易试点。

一位接近国家发改委的人士向记者透露,国家要求上述试点省市在2013年底前后启动碳交易市场,如果上述试点被证明有效,将扩大试点区域范围,增加试点企业数量。

国家发改委能源研究所能源系统分析和市场分析研究中心主任姜克隽表示,试点城市的实施方案包括“澳大利亚模式”“欧盟模式”“日本模式”,今年年底前实施方案有望对外公布;不排除借鉴“澳大利亚模式”,向碳排放大户和高碳行业征收“区域性碳税”。

所谓“澳大利亚模式”,指的是“碳税+碳市场”的两阶段碳价机制:2012年7月1日至2015年7月1日为固定价格阶段,为期三年,碳起始价每吨等效二氧化碳为23澳元,每年按实价递增2.5%。第二阶段为排放交易机制。2015年7月1日起,碳价由交易市场决定。碳市场用户包括固定排放源、交通、工业生产、废弃物(不允许丢弃)和不明排放源。

碳交易与投资首席科学家唐人虎,在各试点省市调研获悉,北京、上海“走得较靠前”,碳交易实施方案将于近期公布。

对于碳交易有可能加大企业负担的市场担忧,他表示,多数试点省市均在过渡期内为重点行业设置了“免费配额”,先参与试点的企业可以有充足时间进行技术改造,今后碳排放配额用不完时,就成为碳交易的“卖方”,并从“买方”企业获得收益。

国家发改委要求,各试点地区安排试点工作专项资金,抓紧组织编制碳排放权交易试点实施方案,报国家发改委审核后实施。

通知还要求,各试点地区要着手研究制定碳排放权交易试点管理办法,明确试点的基本规则,测算并确定本地区温室气体排放总量控制目标,研究制定温室气体排放指标分配方案,建立本地区碳排放权交易监管体系和登记注册系统,培育和建设交易平台。

来源:经济参考报

行政院院會通過 永續能源政策綱領

行政院院會，於2008年6月5日，通過「永續能源政策綱領」。此一政策綱領的落實與執行，則有賴四項法案的立法與修訂：「溫室氣體減量法」（建構溫室氣體減量能力並進行實質減量）；「再生能源發展條例」（發展潔淨能源）；「能源稅條例」（反應能源外部成本）；「能源管理法」（有效推動節能措施）。

在部門別的節能減碳措施上，針對產業部門，該綱領提出的政策方向如下：

- (1) 單位產值碳排放密集度於2025年下降30%以上。
- (2) 核配企業碳排放額度，賦予減碳責任，促使企業加強推動節能減碳產銷系統。
- (3) 輔導中小企業提高節能減碳能力，建立誘因措施及管理機制，鼓勵清潔生產應用。
- (4) 獎勵推廣節能減碳及再生能源等綠色能源產業，創造新的能源經濟。

在配套措施中，並且提出：規劃碳權交易及設置減碳基金，輔導產業以「造林植草」或其他減碳節能方案取得減量額度；推動參與國際減碳機制，透過國際合作加強我國減量能量。

該綱領並且針對政府部門的節能減碳措施，要求：政策規劃應具有「碳中和（Carbon Neutral）」概念，以預防、預警和篩選原則進行碳管理。

台灣節能減碳目標

項目	內容
節能目標	➤ 未來八年每年提高能源效率2%以上，使能源密集度在2015年較2005年下降逾20%，2025年下降50%以上
減碳目標	➤ 全國二氧化碳(CO ₂)排放量在2020年回到2005年排放量，在2025年回到2000年排放量 ➤ 推估十年內二氧化碳排放量減量2.1億噸

資料來源:行政院

台灣能源稅

能源及環境稅結構與開徵決議		
學者版原擬課稅架構	課稅範圍	賦改會決議
能源稅	汽油、柴油、煤油、航空燃油、液化石油氣及核能	●核能暫不納入課稅 ●參考95年行政院版本及學者課稅版本重行規劃能源稅額
溫室氣體環境稅	二氧化碳，每噸課徵750元	●納入課稅 ●稅額另行規劃
汙染環境稅	空汙稅	維持現狀，暫不開徵
	水汙稅	
	海汙稅	
	土壤及地下水汙染稅	
資料來源：行政院賦改會		陳美珍／製表

能源稅減稅配套			
減稅執行年度	減稅方案	減稅利益(億元)	受惠對象
開徵首年(假設為100年)	調降汽油及液化石油氣現行內含稅額0.59~0.66元/公升	82	使用汽油及瓦斯的消費者
101	低收入戶油電價補貼	9	●低收入家庭 ●大眾運輸使用者 ●娛樂事業 ●一般大眾
	大眾運輸票價補貼	44	
	電器、飲料、橡膠輪胎、平板玻璃等貨物稅取消	126	
	廢除印花稅、娛樂稅	130	
102~109	分三年調高薪資特別扣除額，104年時達每人20萬元	63~188	●受薪者 ●520萬個綜所稅申報戶 ●70萬家營利事業
	調高標準扣除額至15萬元	46~366	
	逐年調降綜所稅稅率級距，每一級距1%	203~1,502	
	逐年調降營所稅率，每年1%，至目標稅率12%止	161~1,293	
資料來源：行政院賦改會		陳美珍／製表	

開徵能源稅額 將一次到位

改善所得分配租稅工具定調，將從開徵能源稅及奢侈稅下手。財政部年底將提出能源稅及貨物稅條例法案，油氣類能源稅額將一次到位，棄守「延長賽」不再分十年調升，稅收則全數用來調降綜所稅率及調高個人薪資及標準扣除額，營造輕稅環境，為中低所得者減稅。據指出，能源稅不再以十年緩步調升，並不代表未來包括汽油、柴油等油汽類貨物稅額將一次大幅上漲。高層官員表示，過高的能源稅無法達到重分配效果，且可能重傷經濟，「能源稅會是一個合理的稅制」。

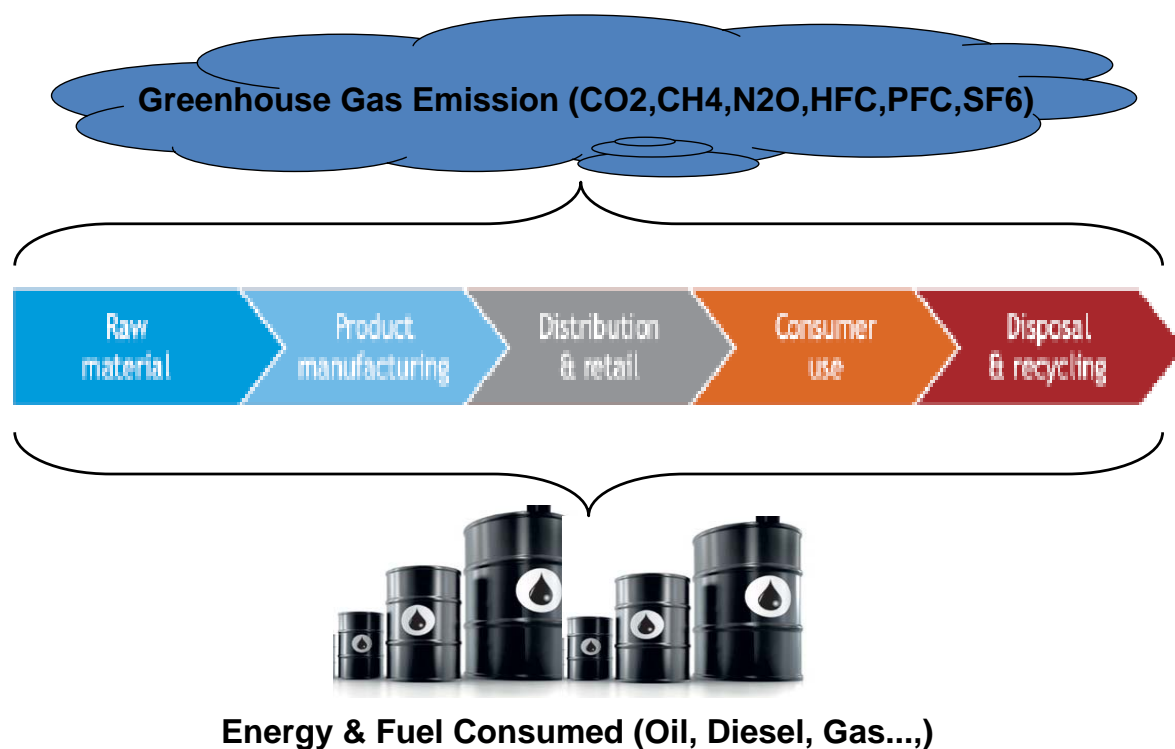
行政院今(15)日將召開改善所得分配專案小組，財政部將就改善所得分配的租稅工具進行報告。財政部認為，能源稅開徵不宜採取分年調升，目的在避免逐年調高油汽類能源稅，導致民間出現年年預期油品價格上漲的心理因素。未來能源稅額調升幅度，將會參考亞洲鄰近國家的油品售價。高層官員說，日、韓及新加坡的汽油與柴油等主要油品的稅前價格都與台灣相近，但加計稅負後的油品售價，以92無鉛汽油為例，皆較台灣高出15元以上，「顯見台灣的油品稅負偏低」。

財政部將參考日、韓及新加坡等鄰近國家油品售價，依照行政賦稅改革委員會所做的決議，達成節能減碳政策目標下，採取非稅手段及稅制手段雙軌併行方式訂定能源稅額，稅額可能會比95年版所訂能源稅的最終稅額還低。95年版能源稅條例草案共包括汽油等八種油汽類貨物，以十年為期，分年調升稅額。其中，汽油每公升每年調升1元，至第十年時調增總稅額達10元，即每公升油品售價接近40元。95年版可帶進能源稅收為3,050億元，估計GDP將因此減少0.37個百分點，但二氧化碳的減量效果則為4.73%。開徵能源稅，將配套廢除現有貨物稅中的電器、飲料、平板玻璃，以及橡膠輪胎等貨物稅，減稅總額達126億元。能源稅除轉換現有油氣類貨物稅外，也將整合汽車汽燃費採隨油徵收，開徵能源稅後即不再課徵汽燃費。

【2010/11/15 經濟日報】

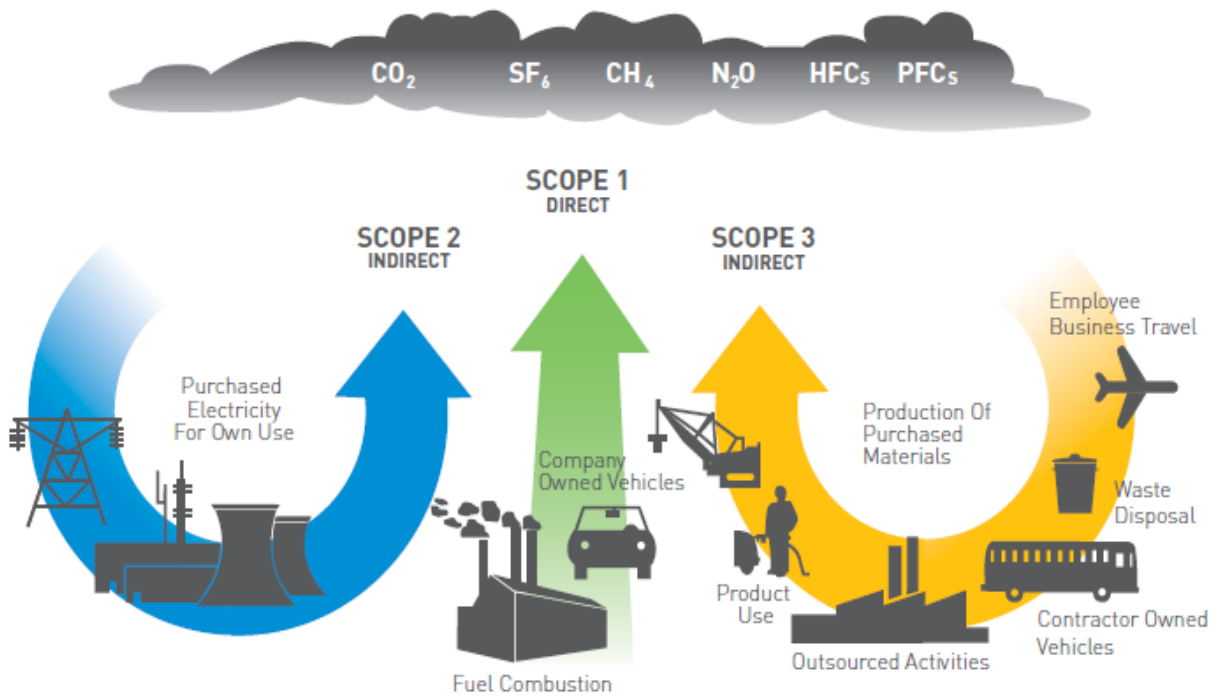
三、物流在供應鏈節能減碳扮演的角色

供應鏈全程都會產生溫室氣體排放
Entire Supply Chain involves Carbon Emission



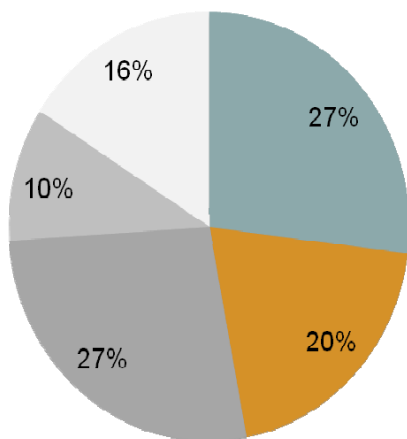
GHG Protocol 定義如何衡量企業溫室氣體排放

GHG Protocol Emission Scope 1, 2 & 3

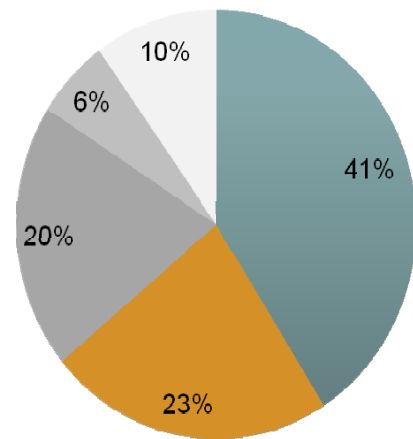


運輸與物流是主要的碳排放來源

1971 Total emissions:
14.1 Gt CO₂



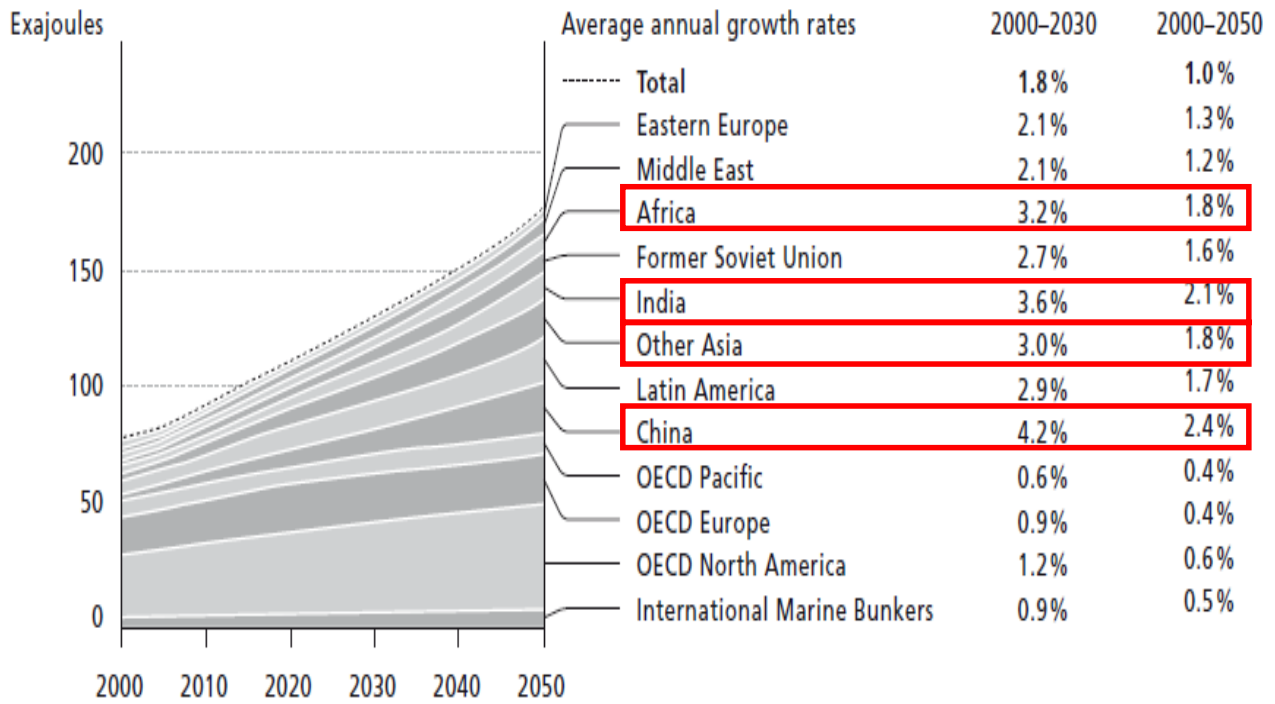
2007 Total emissions:
29.0 Gt CO₂



World CO₂ Emissions by sectors

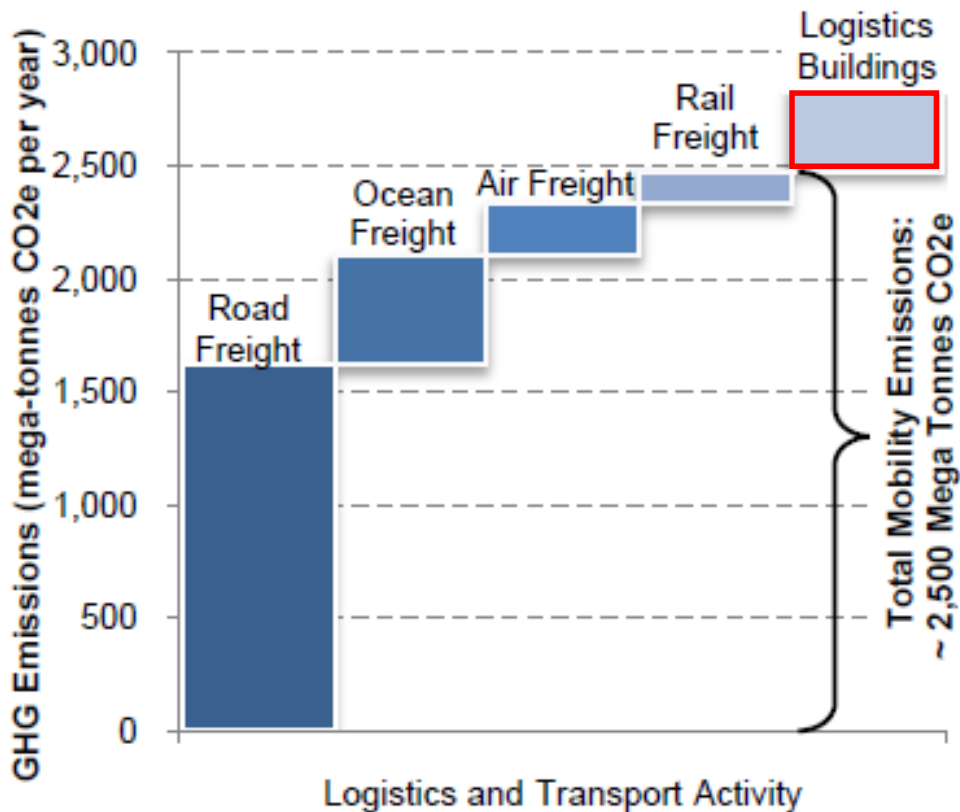
Source: International Energy Agency 2009

Transport Energy by Region



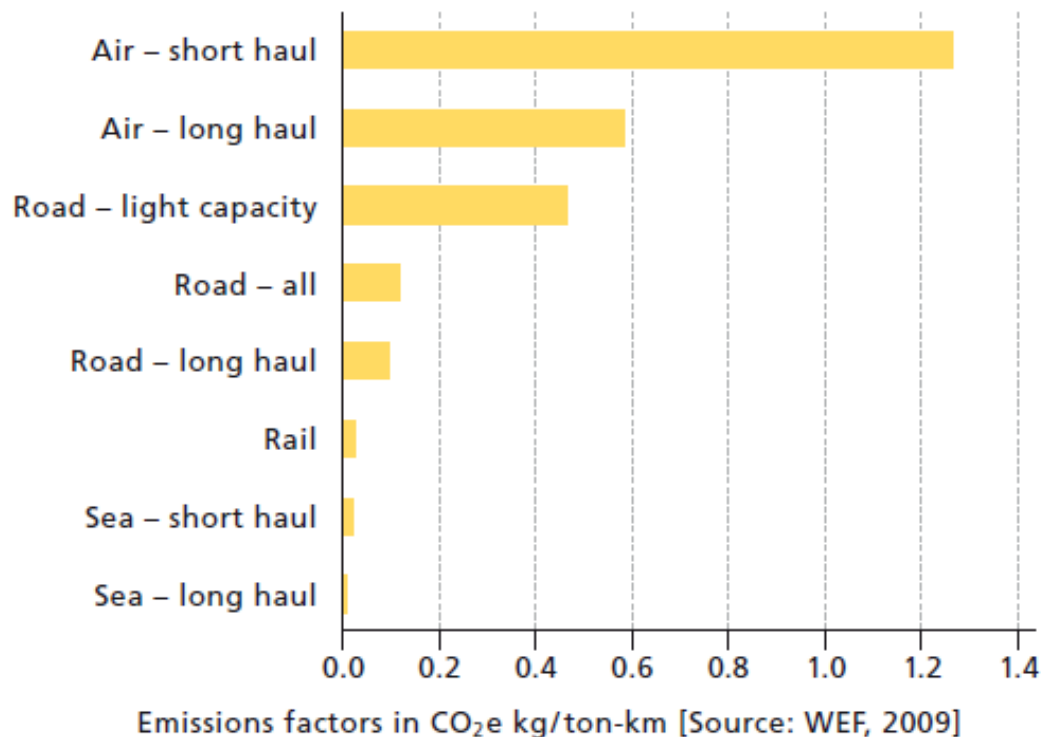
[Source: © WBCSD, 2004]

GHG Emissions of Logistics Activities



Source: WEF, 2009

CARBON INTENSITY OF TRANSPORT MODES



Amazing Facts and Figures- Climate Change

“Climate change” leads the list by far of the most prominent global challenges among respondents [in Asia \(China, India\) – 70% of end consumers surveyed there say it belongs to the most serious problems facing the world.](#)

The number of [GoGreen CO₂ neutral shipments](#) by Deutsche Post DHL almost quintupled from 2008 to 2009 – from 145 million to 704 million.

Companies rated best-in-class in terms of environmental, social and governance practices outperform low-sustainability companies by up to 8%.

[63% of business customers believe that logistics will become a strategic lever for CO₂ abatement.](#)

253 million tons of packaging is used annually in the consumer industry – half paper, half plastic. Production of the paper requires 7 million trees to be felled.

[Starting in January 2012, aviation will be the first transport-related industry to be included in the EU Emissions Trading System.](#)

Amazing Facts and Figures- Climate Change

Additionally, the European Union's "Single European Sky II" package is expected to deliver carbon emissions savings of up to 12%.

84% of consumers in China, India, Malaysia and Singapore say they would accept a higher price for green products – compared to only 50% in Western countries.

Out of 1.62 billion tons of truck emissions in Europe, roughly one quarter are caused by trucks running empty – often due to legal requirements.

In 2009, the logistics industry generated roughly 10% of Europe's GDP. While trucks represent just 20% of the entire Deutsche Post DHL vehicle fleet, they account for 80% of the Group's road emissions.

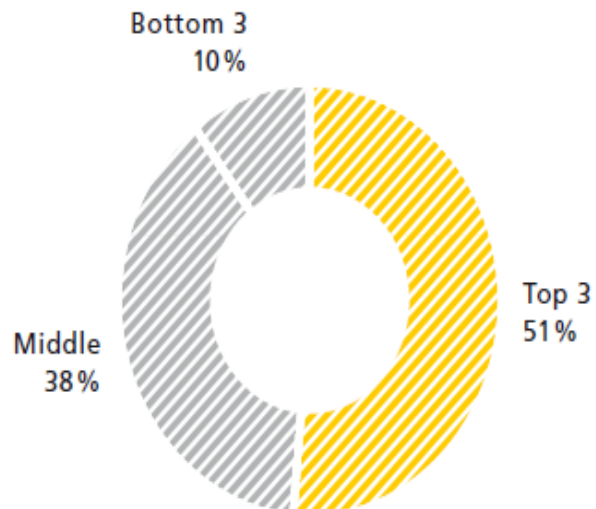
Up to 80% of warehouse energy consumption is due to lighting.

Green Trends Survey, conducted by Deutsche Post DHL - Oct,2010

GREENER OR CHEAPER?

*Within the next ten years ...
... I will favor a company
with green transport/shipping
solutions over a cheaper
provider.*

END CONSUMERS



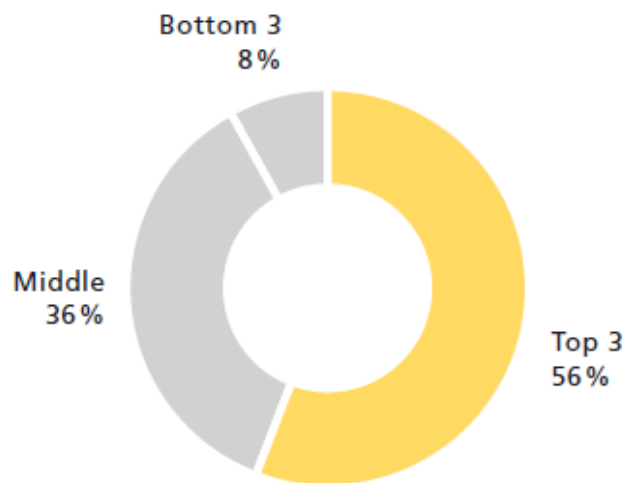
Probability: Bottom 3 = unlikely/very unlikely; Top 3 = likely/very likely

Green Trends Survey, conducted by Deutsche Post DHL - Oct,2010

GREENER OR CHEAPER?

***Within the next ten years ...
... the majority of our
customers will favor a company
that uses green transport/
logistics solutions over
cheaper transport/logistics
solutions.***

BUSINESS CUSTOMERS



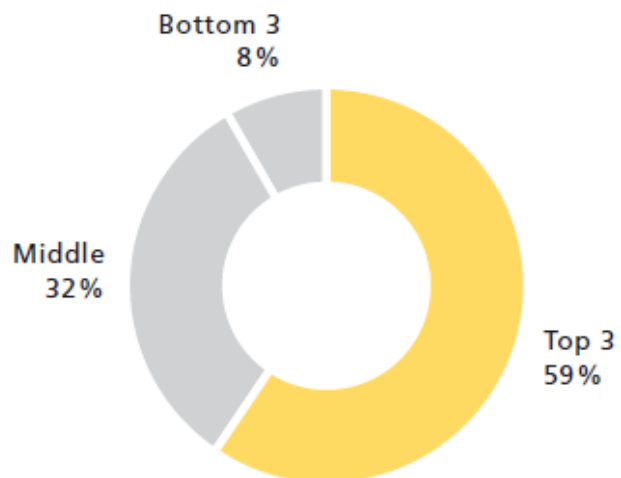
Probability: Bottom 3 = unlikely/very unlikely; Top 3 = likely/very likely

Green Trends Survey, conducted by Deutsche Post DHL - Oct,2010

WINNING CUSTOMERS

***Within the next ten years ...
... green transport of our
products will be a decisive
factor for our company to
win customers.***

BUSINESS CUSTOMERS



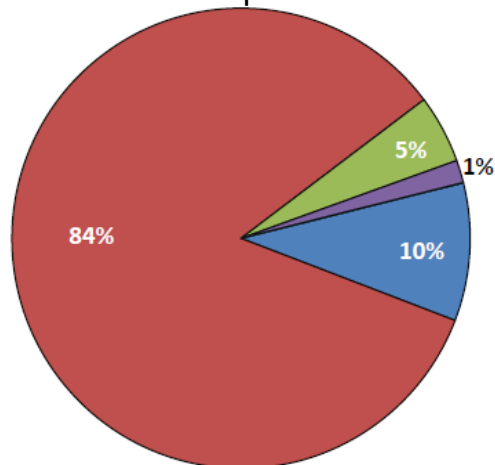
Probability: Bottom 3 = unlikely/very unlikely; Top 3 = likely/very likely

Green Trends Survey, conducted by Deutsche Post DHL - Oct,2010

四. 國際綠色運輸與物流發展現況

綠色運輸與物流已成為企業重視的議題

84 percent of the respondents believe "Green transportation and logistics" issues will become more important over the next three years, and 10 percent expect it become the #1 priority. Virtually none of the respondents believe this is just a trendy fad, with only 1 percent of the respondents believing "green" issues will decrease in importance.



Source: State of Green Supply Chain Management, Mar 2009

- It will become the No.1 priority.
- It will become more important.
- It will remain at the same importance level.
- It will be less important.

Green Logistics and Supply Chain

Improving customer relations is the No. 1 reason why companies adopt green logistics and supply chain initiatives, according to a recent survey conducted by EyeforTransport. The second most popular reason is to **improve public relations**, and the third is to **decrease the fuel bill**. Other findings from the study:

- **60% Percent who measure their transportation and logistics emissions**
- **64% Percent who say green issues are important or very important to their companies' overall strategy**
- **34% Percent who say green issues are fairly or somewhat important**
- **21% Percent who are using a 3PL to help green their supply chain**
- **26% Percent considering using a 3PL for green efforts**

Source: Eyefortransport Sept 01, 2008



Smartway -A good example of Greener Logistics from the US

2004 in the USA leading shippers and carriers have been collaborating with the Environmental Protection Agency (EPA), within the framework of the **Smartway program**, on knowledge sharing and closer cooperation aimed at improving ecological and economic performance (eco-efficiency) in transport. The basic idea of this platform is that players should ensure that transport is carried out in a much more organised and certified way in order to make the industry more sustainable and fuel-efficient.

The Smartway programme therefore adopts environmental standards and issues certification to carriers and to shippers who undertake to have at least 50 % of their total transport volumes handled by Smartway-certified carriers. Smartway has already helped to save between 3.3 and 6.6 billion gallons of diesel fuel per year, which represents a saving of as much as 150 million barrels of oil per year.

Many significant companies, including Sharp, are already shipping more than 80-90 % of their transport volumes in cooperation with Smartway-certified carriers. I believe that **the following factors may be behind Smartway's success: —the EPA is a neutral body with no commercial interests,—Smartway, as a service and platform, covers the whole USA,—Smartway does not regulate the industry with legislation, but instead offers a framework for the market development of 'green' transport .**

SmartWay Transport Program -Sustainable Transport & Logistics



When transporting goods overseas, shifting from air to ocean transport significantly reduces GHG emissions, as each ton of freight transported by ocean produces only about 1/60th of the GHG emissions that air freight produces.

CE companies are taking note of this, and are rethinking their approach to order fulfillment to reduce dependency on air transportation. **Many CE companies are also looking to reduce the GHG emissions associated with their product shipments by using cleaner vehicles in their fleet, including biodiesel and hybrid company trucks and cars.**

CE companies are optimizing their supply chain management and logistics systems to create efficiencies that not only meet customer requirements, but reduce the fuel consumption and GHG emissions from freight facility operations. **Walmart** set an aggressive target to increase its U.S. fleet efficiency by reducing miles driven and loading trailers more effectively.

SmartWay Transport Program SmartWay Transport is a collaboration between the U.S. EPA (Environmental Protection Agency) and the freight sector designed to improve energy efficiency, reduce greenhouse gas and air pollutant emissions, and improve energy security.

SmartWay Reduced GHG Emission

美國在2004年針對運輸物流節能減碳，改善溫室效應及空氣汙染問題，由美國政府產業界發起**智慧綠色物流夥伴計畫(SmartWay Partnership Program)**，以此平台建立綠色物流品牌市場，鼓勵製造及物流業者加入節能減碳行動，其會員包含各產業全球性知名大企業(如IBM、Dell、HP、DHL、UPS、Wal-Mart、IKEA等)，以及運輸物流業者(Rider、Con-Way,)超過2700家，至2010年統計已達節能減碳績效：

- 減少5千萬桶原油使用
- 節省美金61億燃料費用
- 降低1千6百50萬公噸二氧化碳(CO₂)排放，相當於陸上減少3百萬輛車行駛
- 降低23萬5千噸氮氧化合物(NO_x)排放
- 減少9千噸空氣懸浮粒狀污染物(PM)



Walmart Seeks to Double U.S. Fleet Efficiency

Walmart's Logistics Division is working to double the efficiency of its U.S. fleet by 2015. By putting significant effort into reducing the miles driven and loading trailers more effectively, Walmart has improved fleet efficiency by 60 percent compared to their 2005 baseline. Including all carriers, 77 million more cases were delivered in 2009 than the year before while eliminating more than 100 million miles. By driving fewer miles, Walmart's fleet avoided emitting approximately 145,000 metric tonnes of CO₂ into the atmosphere.

TNT

- TNT research shows that a single TNT pickup and delivery (PUD) driver can reduce CO2 emissions by as much as 25% by driving more efficiently. A spin-off benefit is the consequent 25% reduction in fuel costs.
- TNT has therefore launched a global drivers competition to increase awareness amongst the thousands of own drivers and sub-contractors to encourage them to drive both safely and more fuel efficiently.
- The international "**Drive Me Challenge**" is part of TNT's comprehensive "Planet Me" program to cut emissions.

Ryder's

Ryder's energy efficiency and emission reduction strategies include:

- Investments in vehicle emissions reduction technologies
- Adoption of greener building designs and materials
- Continued commitment to solid and automotive waste recycling programs
- Accelerated driver training to promote fuel efficient behaviours
- Ongoing emissions assessments

Ryder's Packaging, paper and cardboard recycling program resulted in a total reduction of more than 2,800 tons of Greenhouse Gas Emissions and conserved:



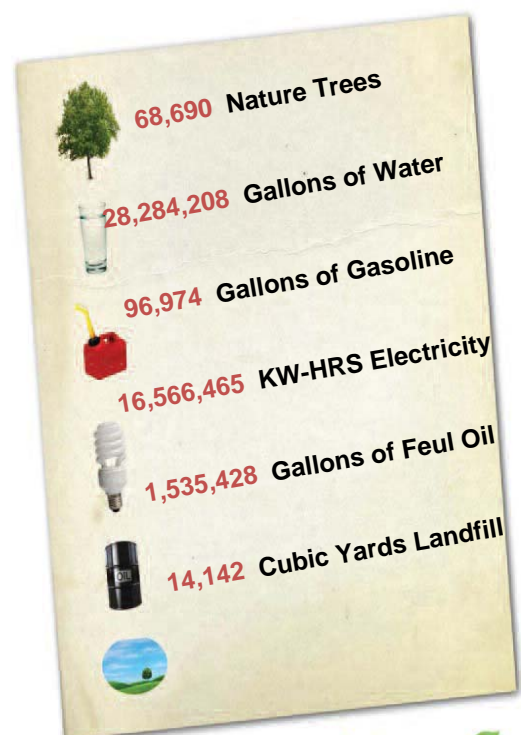
Consume
6.7 million
fewer kBTU's

Cost
\$139,800
less to operate

Result in
1,450 tons
less of CO2
emissions



Ryder's **ENERGY STAR**
office building



中歐鐵路 綠色運輸 -- 渝新歐鐵路



重庆拓宽物流大通道 渝新欧铁路今年延至比利时

2012年重庆海关关区工作会上，中国海关和比利时海关已签署相关协议，今年将把渝新欧铁路的终点站从德国杜伊斯堡延伸到比利时安特惠普港。

2012年2月2日电，作为重庆笔电项目运往欧洲的重要战略通道，渝新欧铁路开通后带来的辐射效应已初步显现。记者今日从2012年重庆海关关区工作会上了解到，中国海关和比利时海关已签署相关协议，今年将把渝新欧铁路的终点站从德国杜伊斯堡延伸到比利时安特惠普港，今后，“重庆造”项目进入欧洲的通道将更加宽广。

渝新欧铁路有望今年增为每周3班

据了解，渝新欧国际铁路联运大通道是铁道部、国家海关总署及途经各国加强合作，在原新欧亚大陆桥的基础上进一步优化完善的国际物流大通道，也是重庆全球笔记本电脑基地产品、机电产品、汽车配件快速运往欧洲新的战略通道。运行路线从重庆始发，经达州、安康、西安、兰州、乌鲁木齐，到达边境口岸阿拉山口，进入哈萨克斯坦，再转俄罗斯、白俄罗斯、波兰，至德国的杜伊斯堡。全程11179公里，运行时间约为13天，线路运行费比航空节省、运到时限比海运缩短、具有安全性高、通关便捷的优势。

“渝新欧铁路运行后，效果显著，也让比利时看到了机遇。”重庆海关相关负责人道，去年10月，比利时海关就和中国海关签署协议，在今年启动中比绿色通道项目，把渝新欧铁路延伸到比利时，“比利时很看好重庆的市场，他们希望通过渝新欧铁路，把更多的欧洲货物带到重庆。”

沈扬透露，渝新欧铁路在今年有望从现在的一周一班列车增加到一周两到三班，形成班列常态化。

航空業 承諾減碳

國際航空運輸協會 (IATA)10日承諾，在2020年前每年提升燃料效率1.5%、2021到2050年之間每年改進2%，並呼籲世界各國政府提供獎勵措施，加速生質燃料的發展。

國際航空運輸協會代表10日在蒙特婁舉行的國際民航組織氣候變遷會議上同意，2050年以前，把二氧化碳排放量從2005年的基準減少50%。國際航空運輸協會由世界最大的230家航空公司組成。

國際航空協會主席畢西納尼說，航空業將致力於改善環保表現，長程減碳目標比政府的規畫標準更高，沒有產業比航空業做的那麼多。政府和航空公司合作是降低排放量的關鍵。他並呼籲讓航空業參與全球碳交易市場，以抵銷業界產生的廢氣，直到最終解決技術出現。

根據政府間氣候變遷委員會資料，航空業排放的二氧化碳占全球排放量2%，在所有導致氣候變遷的氣體排放量中占3%。
京都議定書將於2013年1月到期，各國政府2009年12月將在哥本哈根開會，研擬京都議定書的後續協議。【聯合晚報】 2009.10.11

欧盟航空ETS 2012年1月1日正式實施

欧盟航空ETS的机制设置是，根据航空公司在2004-2006年平均排放水平的97%来为2012年设限，2013年将降至95%。而航空公司需要购买此限制许可的15%，其余部分将根据飞机2010年每公里承载的重量免费分配。所有在欧盟机场起飞和到达的航班都将适用此规定。

2012年航空公司必须参与欧盟ETS交易，以保证到2013年能够分配到足够排放配额，否则将面临巨额罚款，甚至被强迫停航。

ETS目前在30个国家运作(欧盟的27个成员国和冰岛，列支敦士登和挪威)，已经有约12,000个工厂和电厂加入，其目标是使2020年的排放水平比2005年低21%。在其严格的体系之下，航空业将在2012年加入，并有可能在2013年继续拓展至石油化工业，制氮和制铝业，以及其他能源行业。

ICAO将于2012年底前出台航空公司碳排放方案

国际民航组织(ICAO)秘书长雷蒙·本杰明于2012年1月17日在华盛顿国际航空俱乐部上声称，**国际民航组织(ICAO)将以全球为基础就如何制定航空公司碳排放规章于2012年年底出台方案**。他说，航空公司安全是全球性计划，因此行业的环境计划也同样属于全球性问题。既然成员国之间存在着明显差异，我们就要拿出全球性解决方案。

雷蒙虽然没有透露碳排放方案的具体细节，但他说，方案会以2010年讨论通过的ICAO决议为框架并于年底前出台。

针对于今年元月生效，但争议不断的欧洲碳排放交易体系，雷蒙说，他不建议使用芝加哥公约第84条去解决在欧盟委员会与反对欧盟单方面征收碳排放税的政府或航空公司之间存在的争议。这第84条不仅不利于推进问题的解决，反而会使各种资源得不偿失。因为该第84条是赋予国际民航组织理事会用于成员国之间存在无法解决的纷争时可以行使决定的权利。他感到庆幸的是，目前他还没有第84条的司法诉讼案，这意味着ICAO可以继续在这个问题上下功夫。（编译自2012年1月18日出版的《世界航空运输》杂志）

DHL Go-Green

全球最大的邮政和物流公司DHL公司计划2020年将90%的飞机更新为更加节油的新型飞机，是该公司为实施业内首推的“绿色运输项目(GOGREEN)”而采取的核心举措之一。（2010年6月）全球最大的邮政和物流公司DHL公司计划2020年将90%的飞机更新为更加节油的新型飞机，这一涉及数百架飞机的“大胆”行动，是该公司为实施业内首推的“绿色运输项目(GOGREEN)”而采取的核心举措之一。

除了降低成本，DHL大量引进新型飞机的目的还在于，在航空业推行“绿色运输”，减少对环境的影响的同时促进行业的可持续发展。该公司在去年宣布，在2020年将集团的碳能效提高30%，其中，到2012年，包括转包服务在内，将公司递送的每件包裹、运输的每吨货物和公司不动产每平方米减少碳排放10%。

DHL是全球邮政和物流行业首家对减少二氧化碳排放设定量化目标的企业，公司在航空运输、陆路运输、不动产、产品及服务四个主要的业务部门采取了有针对性的措施。该公司于今年4月底启动了“绿色运输项目”，核心是帮助客户减少它们的碳排放。具体举措包括使用混合动力汽车，优化网络设计，建议一部分客户将空运改为海运，将汽车运输改为铁路运输等。

DHL计划在今年年内将“DHL绿色快递”从欧洲推广到亚太地区的17个国家和地区。在中国，DHL将于今年第三季度推出“碳中和”服务。在这项增值服务中，客户可以选择将其全球范围的全部或部分业务加入“DHL绿色快递”并支付投递费用的5%作为“绿色基金”。DHL将计算每票快件在整个投递过程中所产生的碳排放量并通过对相关碳管理项目，如汽车替代燃料技术、太阳能电池板和重新造林等再投资，来削减和抵消全球快件运输中的碳排放。客户每年会收到DHL颁发的证书，标明以其名义削减或抵消的碳排放数量，以示公司在降低碳排放方面所作出的努力。

UPS expands carbon offset option

UPS has expanded its carbon neutral offering, which is now available to more than 400,000 customers in Europe, Asia and the Americas as an option within the **UPS WorldShip system**.

[WorldShip customers](#) can choose to pay a small fee to calculate and offset the carbon emissions associated with their shipments. UPS collects the fees and uses the funds for environmentally responsible projects around the world. UPS matches the offset purchases up to US\$1 million, doubling the impact of participation.

WorldShip, the full-featured, Windows-based shipping software, is ideally suited to customers who ship five or more packages per day. [The calculation to measure the CO2 impact of the customers' shipments is based on current and historical operational data, including distance and transport mode and a comprehensive carbon inventory.](#)

FedEx Express Launches Carbon Neutral Shipping

FedEx Express is launching a carbon-neutral shipping program for its most widely used packaging for document shipping.

FedEx Express will make an investment in global projects that displace or sequester greenhouse gas emissions from the atmosphere, neutralizing the impacts of the carbon emissions emitted during the shipment of all FedEx Envelopes around the world.

[FedEx Express will calculate the emissions on an annual basis and buy the equivalent amount of carbon dioxide offsets from the not-for-profit BP Target Neutral](#), which invests in low carbon development and conservation projects. These projects include a biogas farm facility in the Netherlands, a reforestation project in the Tanzanian Southern Highlands that is converting degraded grassland to commercial forest, and a landfill gas collection system at Thailand's first sanitary landfill.

FedEx says the commitment makes it the first global express transportation company to offer carbon-neutral envelope shipping at no extra charge to the customer. In February, logistics company DPD announced plans to move to completely carbon-neutral shipping, at no extra cost to customers, in its five largest markets. The company's France, Germany, U.K., Netherlands and BeLux markets will enjoy carbon-neutral shipping in July, with the rest of its markets following suit later on. FedEx says it became the first company in the U.S. transportation industry to set a global aviation-related CO2 reduction goal and a commercial vehicle fuel efficiency goal, in 2008. **[By the end of FY2011, aircraft carbon dioxide emissions had declined by 13.8 percent compared to 2005 levels.](#)** FedEx Express has improved total fleet miles per gallon within the U.S. by more than 16 percent since 2005, the company says.

航空業 想從海藻、植物揩油

燃油成本太高 腦筋動到生質燃料 薺藍、麻瘋樹變身新寵兒

航空業不堪燃油成本負荷，把腦筋動到替代性能源上，從海藻、薺藍（Camelina）到麻瘋樹（jatropha）等植物，都已成為提煉生質燃料的新寵兒。

大陸航空（Continental Airlines）7日領先業界，在一架飛往休士頓的波音737噴射客機中，使用完全由海藻和麻瘋樹提煉製成的生質燃料，這是史上第一架採用純生質燃料的雙引擎客機，宣告環保飛航新時代的來臨。

在此之前，航空業者多半使用部分生質燃料，例如，紐西蘭航空上周在一架波音747客機的其中一具引擎，添加含有50%生質燃料的燃油；日本航空未來幾周也將展開類似試飛計畫。儘管飛機燃油價格已隨國際油價下挫而回跌，但業界主管表示，他們決定不再依賴單一能源，以免油價走升時再度受到衝擊。

大陸航空發言人麥生指出，替代燃料與即將被淘汰的傳統噴射燃料價格相差無幾，「只要生質燃料的產銷市場還未全面發展，就沒人知道價格」。經濟學家也指出，生質燃料和汽油的添加物乙醇一樣，在達到量產規模以前，價格都會隨傳統燃料波動。

目前被大量使用的飛機替代燃料，是南非沙索公司（Sasol）從石油和煤提煉製成的合成燃料。英國國防部去年4月已核准飛機百分百使用合成燃料，吸引許多航空公司熱烈捧場。

經濟日報01/2009

Carrier expresses interest in air ship

A major carrier will sign a contract for a fleet of airships in June

UK-based Hybrid Air Vehicles, which is currently working on a hybrid air ship for U.S. defense contractor Northrop Grumman, is close to signing a contract with a major airline for a fleet of vehicles.

The lighter-than-air blimps are capable of carrying up to 200 tonnes at a fraction of the fuel costs associated with conventional cargo planes. Perhaps most significantly of all, the reborn airship will not be filled with highly flammable hydrogen, which was the downfall of its predecessors. Instead it will be filled with a mix of 60 percent helium and 40 percent air.

“We expect to sign a contract in June and will then have two years in which to deliver the first craft,” Gordon Taylor, marketing manager for HAV, told *Air Cargo World*. “The order would be in the double-digits and the craft used to augment the carrier’s existing operations.”

Taylor remains tight-lipped about the potential buyer, revealing only that it is a non-U.S., publicly listed company that currently operates more than 100 aircraft. This order, combined with the Northrop Grumman project, could be the start of a slow shift toward blimp-like cargo transportation devices. For Northrop Grumman, the company must build a vehicle that is capable of staying aloft for 21 days at a time and can be flown with or without a three-man crew. The craft is scheduled to enter service in early 2012.

“We really do see a big potential in the freighter market,” Taylor said. “One of these craft could easily fly between China and Europe in three days at a quarter to half the fuel cost of conventional aircraft and without the need to operate airport to airport, saving further on time and handling costs.”

Hybrid Air Vehicles already has designs on the drawing board for craft capable of carrying payloads of between 20 and 200 tonnes. It is a design concept that can easily be extracted to allow craft carrying up to 1,000 tonnes. 18/03/2011 Air Cargo World

海空運碳排權需求料升25%

【大公報訊】倫敦勞氏船級社氣候變化部研究專員沃里斯日前在新加坡出席「亞洲碳排放環保論壇」時預期，佔全球二氧化碳排放量5%的海運業和航空業，對碳排放權的需求將在12月聯合國氣候變化大會前上升25%，繼而推高碳排放權的交易價格。

國際海事組織（IMO）預期，全球船舶二氧化碳排放量在2020年將攀升至每年13.4億噸。沃里斯預期，屆時海運業將每年缺少7億噸二氧化碳排放權。她預期，海運業和航空業碳排放權的需求將較現時急增25%，當中海運業佔去15%。歐洲碳排放權配額場外交易價格昨報每噸14.4歐元，供求逆差預料會推高交易價格。聯合國於12月在哥本哈根召開聯合國氣候變化大會，歐盟將爭取在會上落實規管全球海運業在2020年較2005年減排20%的目標，碳排放權需求將因而增加，有關目標已引來希臘、塞浦路斯和馬耳他等歐洲傳統航運國家反對。

每年需付40億歐元

沃里斯援引2007年國際海事組織（IMO）報告稱，以乾散貨和集裝箱運輸為首的海運業每年排放8.7億噸二氧化碳，相當於德國全年的排放量。她預期，以現時碳排放權交易價格計算，海運業自2013年起，每年需要付出40億歐元額外購買碳排放權，才可達到歐盟預計的標準。現時全球規模最大的跨國性碳排放交易機制是由歐盟在2005年成立，當時受到管制的產業包括煉油業、能源業、冶煉業、鋼鐵業、水泥業、陶瓷業、玻璃業和造紙業等，有關工業排放的二氧化碳佔去歐洲總量46%。

EU launches attempt to deliver shipping emissions trading scheme



[The EU is asking for views on how best to reduce greenhouse gas emissions from shipping in a move that could pave the way for the sector to follow aviation into the bloc's carbon trading scheme.](#)

A consultation document published last week considers a number of options for curbing emissions, including a market-based mechanism that would apply to ships' emissions from the port they left to any EU port, and then on to the next port of call.

This could mean bringing shipping into the EU's emissions trading scheme, a move that would require carriers to purchase carbon allowances to cover the CO2 they produce.

However, the consultation document alternatively proposes a straight tax on bunker fuel or emissions, the levelling of carbon caps on vessels, and a "compensation fund" that would see companies make payments in line with the environmental damage the industry causes.

Although an EU source told BusinessGreen there is "no preferred option," the EU has made noises about taking shipping into the emissions trading scheme (EU ETS) in the past.

[Shipping emissions account for approximately three per cent of current global CO2 emissions, but are expected to more than double by 2050 if no additional measures are taken to reduce the sector's carbon footprint.](#)

[Long-running talks at the International Maritime Organisation \(IMO\) have come up with a series of efficiency targets, which the UN body estimates will cut emissions by a quarter over the next 20 years.](#)

European Legislation compelled the EU to take action if no international agreement to deal with maritime emissions was in place by the end of 2011 to help meet its own target of a 20 per cent emissions cut across all sectors by 2020. While the [industry recognises the problem](#), it is highly unlikely to support any regional attempt to reduce emissions, arguing that any new green policy measures should be applicable worldwide in order to avoid trade disparities.

The arguments mirror the row over the EU's attempts to [shoehorn airlines into the ETS](#), which this year saw airlines forced into the emissions trading scheme for the first time, despite legal and political efforts to overturn the EU's decision.

"The introduction of measures to cut emissions will also limit fuel consumption – reducing ships' fuel bills by many billions of euros each year – and hence bring down transport costs," it said in a statement. "Such action will also stimulate demand for 'low-carbon' maritime equipment and services." 24 Jan 2012, BusinessGreen

貨櫃船減速航行 降低油耗與碳排 Maersk Cuts Fuel Use, Emissions 30% by Slowing Down



February 18, 2010

Danish shipping company Maersk has cut fuel consumption on major routes by as much as 30 percent, as well as reduced greenhouse gas emissions by an equal amount by cutting the top cruising speed of its ships in half over the past two years, reports the New York Times.

Maersk's director of environmental sustainability Soren Stig Nielsen told the newspaper that traveling more slowly delivers a great opportunity to lower emissions without a huge leap in innovation.

Slowing down from high speeds reduces emissions because it reduces drag and friction, which holds true for travel on water, air or land, reports the New York Times. Peder Jensen, a transportation expert at the European Environment Agency, said in the article that planes could easily reduce emissions by slowing down 10 percent, adding only about five to six minutes of flight time between New York and Boston or Copenhagen and Brussels.

And according to the International Energy Agency driving 55 instead of 65 miles per hour cuts carbon dioxide emissions of American cars by about 20 percent.

Another way shipping firms can reduce their carbon footprint is through the use of collapsible ocean shipping containers, according to its maker Cargoshell.

Despite the various ways that shippers are trying to curb their emission, there are calls for a tax on fuels used in shipping to reduce carbon emissions in the industry.

CKYH Alliance Goes Green

The CKYH Alliance (COSCO, K-LINE, Yang Ming, and Hanjin Shipping) has announced a name change to CKYH - the Green Alliance, signifying its commitment to environmental protection.

CKYH - the Green Alliance calls for collective efforts of implementing "green shipping" in order to fulfil the responsibilities of corporate citizens. All Alliance members will take further measures such as eco- steaming for energy-saving and emission reduction, etc. Fully aware of the severe challenges in the post-crisis era, the Alliance members have re-affirmed to further strengthen the collaborative partnership and confirmed the direction of future development.

To overcome these challenges, the Alliance members will continuously harmonise their services, whilst taking full advantage of regional transshipment hubs, building up extensive feeder networks, extending cooperation to the North/South trades and new emerging markets, and widening the scope of cooperation to other sections of the transport chain by optimising the alliance's resources such as terminals, chassis, intermodal facilities and equipment.

CKYH - the Green Alliance will continue to provide high-quality, competitive, globally-integrated container shipping services, ensuring reliable, stable and comprehensive worldwide coverage. Apr 19, 2010

YANG MING'S ENVIRONMENTAL POLICY



[ENVIRONMENT PROTECTION POLICY]

" Care about the environment; treasure the earth "

To protect the environment is our enterprise's social responsibility. Because we have only one Earth, we must try our best to avoid damaging the environment and wasting resources. We must leave our descendants a clean and healthy living space.

Yang Ming provides global ocean shipping services, protecting the ocean environment, efficient use of pollution and contributing to society.

To achieve the goal of implementing the environmental management system, we principles for our staff to follow and adhere to.

- ▶ Complying with domestic environmental laws/regulations and international convention and to preserve marine eco-systems.
- ▶ Economizing the consumption of resources and avoiding unnecessary waste of resources.
- ▶ Strengthen and improve control of the root causes of pollution in order to prevent environmental pollution.
- ▶ Endeavoring in the reuse and recycle of resources in order to reduce unnecessary waste.
- ▶ Establishing an environmental management system to continuously improve the management.
- ▶ Strengthen environmental education and promotion to enhance awareness and to safeguard the environment.

TRANSPORTATION AND THE ENVIRONMENT

Special Advertising Section to The Journal of Commerce

Yang Ming Line is committed to protecting environment for future generations

As one of the world's leading container transportation companies, Yang Ming Line provides worldwide, independent ocean and intermodal containerized cargo shipping services connecting Asian, European, Mediterranean and U.S. markets.

Protection of our ocean's environment is a top priority at YML, not just for today's day-to-day operations and conservation, but importantly, for generations to come. To illustrate its companywide dedication to promoting and ensuring safe and sound environmental practices, Yang Ming developed a corporate slogan: "Concern for the Environment, Treasure the Earth."

In addition to having acquired ISO-14001 Certification to illustrate its commitment to protecting our environment, the company formed the Yang Ming Oceanic Culture & Art Museum in Keelung City, Taiwan. YML hopes this museum will serve to promote and also to satisfy many



of the company's environmental and marine conservation goals, including fostering environmental and oceanic awareness and appreciation — while arousing creativity focused on maritime conservation for today and tomorrow.

It is YML's hope that various communities in addition to our younger generations will begin to appreciate the ocean more fully, to become more familiar with the ocean and marine biology, to protect the ocean and to be encouraged to responsibly explore and understand our environmental ecosystem and our oceans — in depth.

ISO-9001 Certification and ISO-14001

Certification have been acquired to demonstrate YML's determination to continually upgrade, maintain and seek to improve its quality of service, while enhancing and strengthening its environmental protection measures. Its efficient use of natural resources, pollution prevention and — importantly — its contribution back to society.

Upgrading our service quality, improving our work efficiency, reducing our operational costs, strengthening our environmental protection measures and laying a firm foundation for our long-lasting business activities are ongoing day-to-day objectives for YML's dedicated employees.

Protection of the environment is a vital social responsibility of our enterprise. Because we have only one earth, we must try our best to avoid damaging the environment and wasting precious resources. We must leave our descendants a clean and healthy living space. ■

Source: Yang Ming Marine Transport 2010, Journal of Commerce

Using a Kite to Tow An Ocean Cargo Vessel

SKYSAILS ARE ONE TECHNOLOGY



Technologies are available: the "SkySail" has shown average fuel savings of up to 30%, according to company data from seatrials

利用太陽能作為商船動力 Nippon Yusen Ships Going Solar



- According to a report on Businessgreen.com, Nippon Oil Corp. and Nippon's NYK line are collaborating on building a solar powered cargo ship.
- Japan's biggest shipping line Nippon Yusen KK and Nippon Oil Corp have confirmed they are working to install solar panels on top of a 60,000 tonne car carrier (big enough to carry 6,400 automobiles) intended for use by auto giant Toyota.
- Solar panels have been used on container ships before to generate power for auxiliary systems, but [the new 40KW array is expected to represent the first time the sun's energy has been harnessed to help drive a ship's engines.](#)
- The freight recently announced plans to spend \$1.37 million to have Nippon Oil Corp [develop a 40-kilowatt solar panel system, with 328 panels, for its ships.](#) The system is expected to be finished in December.

可摺疊式的貨櫃 有助於節能減碳 Collapsible Ocean Shipping Container May Help Reduce Emissions



February 5, 2010

A collapsible ocean shipping container could help international shipping firms reduce their carbon footprint. [The container collapses to one-fourth of its "full" size](#), meaning that more containers can be shipped back to the source in less space.

The container is made by Cargoshell, a Dutch firm.

[It takes only about 30 seconds to fold and unfold the container](#), reports [Triple Pundit](#).

About 26 percent of all containers shipped every year originate in China, and most of those are returned empty, but taking up the same amount of space on a ship, reports [Gizmag](#).

The container is currently being demonstrated as a 20-foot container, but also can be made to the 40- and 45-foot lengths that are more commonly used.

The collapsible container from [Cargoshell](#) also has a roll-up door, as opposed to the outward-opening doors on most containers. This means that containers can be stacked closer together.

Also, the Cargoshell container is made of composite materials, [making it 25 percent lighter than standard steel containers, further reducing the new container's carbon footprint.](#)

The container is said to require only a third of the CO2 to produce as steel containers, Gizmag reports.

The downside to this new container? It costs about three times as much as the steel containers it intends to replace.

54億美元 麥司克買30艘 超大18,000TEU貨櫃輪

為因應油價持續上漲以及利用世界經濟復甦擴張業務，全球最大貨櫃船航商丹麥麥司克公司（**Maersk**）已同意向南韓大宇造船海洋公司購買多達30艘超級大貨櫃輪，交易金額可能高達空前紀錄的54億美元。大宇造船發表聲明說，這項交易包括10艘確定訂單以及另外再訂購20艘的選擇權。[麥司克所訂購的超大貨櫃輪可容納18,000TEU貨櫃，足以裝載1,800萬台平面電視。第一批的10艘將在2014年前交貨。](#)

這款超大貨櫃輪長400公尺，容量比目前航行的最大貨櫃輪還大30%，有助於司麥克節省油料與碳排放。過去兩年來油價已漲逾一倍。隨著全球經濟衰退結束、美國與歐洲對亞洲貨物的需求回升，新加坡最大的海皇航運公司（**Neptune Orient Lines**）去年也向大宇造船訂購2艘可運載1.07萬只貨櫃的貨輪。倫敦乾散貨船管理公司**Zodiac Maritime**去年10月向南韓**STX**造船公司下訂單，欲建造10艘可搭載1.3萬個貨櫃的貨輪，每艘造價約1.4億美元。產業分析師說，船運業者還會訂購更多大船，而世界造船業三哥大宇造船將是這波需求的主要受惠者。麥司克看好貨櫃航運市場在全球走出經濟衰退後的發展，上月預測今年全球貨櫃市場可能成長逾8%，超越去年11月預估的6%成長率；全球最大的船舶經紀業者**Clarkson**認為將可有9.7%的成長。麥司克去年底也調高2010年的財測，並表示運費上漲和貨運量上升將有助於締造公司創立106年以來的最高獲利。大宇造船過去金額最高的單筆訂單，是2008年替麥司克建造16艘可運載7,450只貨櫃的貨輪，總值是23億美元。因貨輪和出口計劃的需求，大宇造船12月發布財測，認為今年有望獲得110億美元的訂單。首爾未來資產證券分析師**Lee Sokje**說：「貨櫃航運業現在的趨勢是大船當道，如果現在不開始建造新的大貨輪，最早在2013年我們就可以看到供不應求的現象。」[大宇造船說，為麥司克建造的新貨輪引擎，內裝的廢熱回收系統和目前麥司克在歐亞航線運行的貨輪比起來，可減少50%的碳排放量。](#)【2011/02/22 經濟日報】

FUTURE SHIPS COULD BE MUCH CLEANER



The IMO has reported estimates of up to 70% latent efficiency in the shipping industry that could reduce fuel use and curtail fuel-related CO₂e emissions.

五.如何綠化你的物流與供應鏈

Current or Planned Environmental Initiatives

The survey highlighted a number of environmental initiatives that companies are utilizing, or planning to utilize, with regards to supply chains and distribution networks.

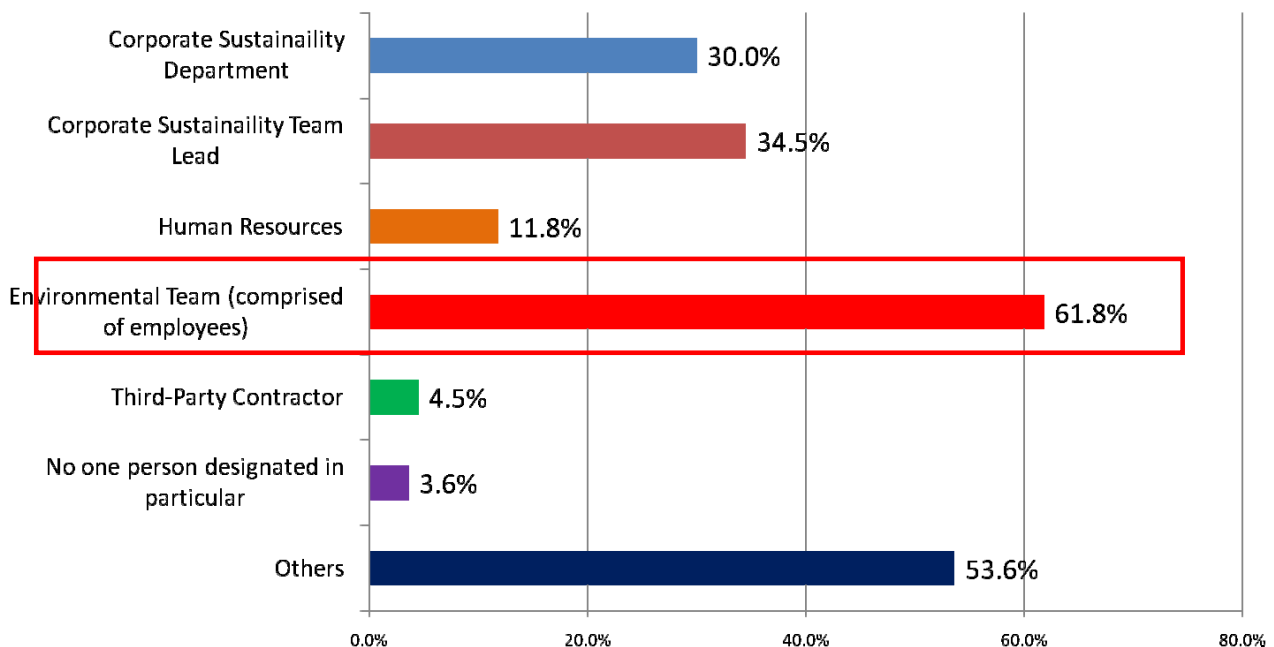
- 1. Improving energy efficiency was the most notable initiative, with 75%**
- 2. Emissions measuring and/or reductions (53%),**
- 3. A corporate green team (51%),**
- 4. Vehicle re-routing to reduce miles (47%),**
- 5. Using more environmentally friendly logistics providers (45%),**
- 6. Design for environment (44%),**
- 7. Strategic warehouse & distribution center placement (44%).**
- 8. Near and/or green sourcing (34%),**
- 9. Trialing and/or use of alternative fuels (34%),**
- 10. Greener manufacturing processes (29%),**
- 11. Horizontal collaboration with other companies (28%),**
- 12. Moving freight away from air to other modes (27%),**
- 13. Carbon off-setting or trading (24%),**
- 14. Moving production closer to home (12%).**

如何綠化你的物流與供應鏈

1. **A Corporate Environmental Team (成立環境永續管理團隊)**
2. **Improve Fuel Efficiency/ Use Alternative Fuels(提昇能源效率/使用替代能源)**
3. **Packaging Reduction /Reusable Container(包裝減量/採用可重複使用容器)**
4. **Loading/ Route Optimization (裝載與路徑最佳化)**
5. **Carbon Calculator/Environmental Management System (計算碳排/環境永續管理系統)**
6. **Green Building/ Warehouse (綠化建築/倉儲/場棧)**
7. **Logistics & Supply Chain Network Re-design (重新設計物流與供應鏈網絡)**

62% of Firms Assign Environmental Team for Green Goals

Who is accountable for helping your company meet its Green-related goals?



IMF示警伊朗減供 油價上看160美元

國際貨幣基金（IMF）警告，若伊朗石油供應銳減，國際油價可能飆漲三成至每桶逾160美元。國際航空運輸協會（IATA）也說，若油價漲破150美元，今年全球航空業可能虧損逾50億美元。

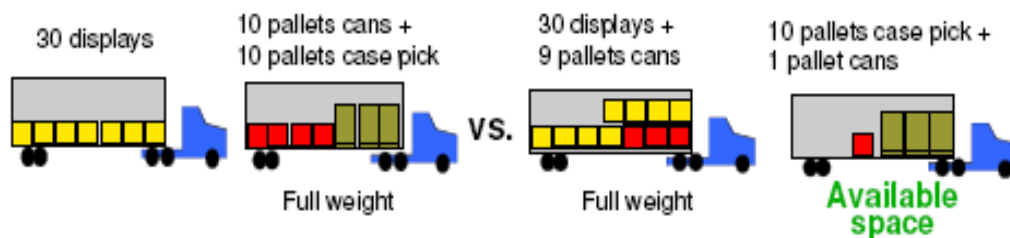
IMF總經理拉加德在印度德里的論壇說，全球經濟展望已度過寒冬，但仍危機四伏，一旦國際油價突然暴漲，將為全球經濟帶來嚴重後果。她說，若伊朗石油出口大幅減少，無疑將推升油價至少一段時間，漲幅介於20%至30%，可能使布侖特原油每桶漲破160美元。拉加德提出警告，正值紐約時報報導，美國軍方進行模擬演習，顯示以色列突襲伊朗的危機升高；美國國防部官員說，這種事件可能導致局勢失控，演變為地區戰爭。

IATA則調降全球航空業今年獲利預測至30億美元，低於去年12月預估的35億美元，原因是油價計算基期調高至平均每桶115美元。執行長泰勒（Tony Tyler）說，如果國際油價因為西方和伊朗間的緊繃局勢而暴漲至每桶150美元，航空業今年可能虧損50億美元以上。但沙烏地阿拉伯石油部長奈米（Ali Naimi）說，必要時能立即增產原油多達25%。他說，沙國還有多餘產能和每日250萬桶的額外儲油。奈米的談話減輕市場疑慮，紐約西德州輕原油5月期貨20日收跌2.3%至每桶106.07美元，倫敦布侖特原油5月期貨也跌1.3%至每桶124.12美元。不過，美國能源部21日指出，美國上周原油庫存意外減少116萬桶至3.463億桶，刺激西德州輕原油5月期貨21日盤中小漲0.3%至每桶106.33美元，布侖特原油則漲0.2%至每桶124.36美元。【2012/03/22 經濟日報】

作好裝載規劃, 不但減少油耗和碳排, 同時也降低成本

Less trucks = Less

- ✓ \$'s
- ✓ Carbon emissions
- ✓ Dock congestion
- ✓ Traffic on the interstate



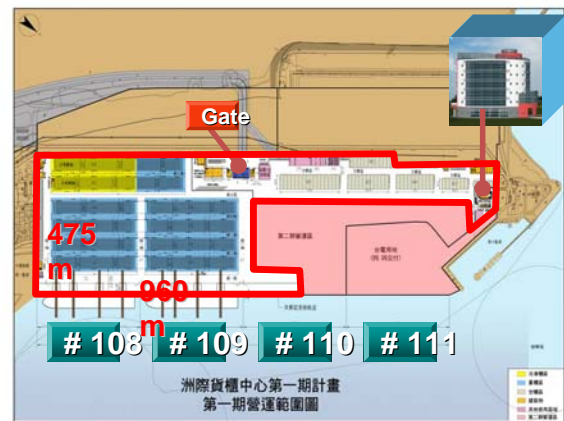
Loading/ Routing Optimization

Carbon Calculator & Environmental Management System

Kaohsiung CT6 green terminal

Green Terminal :

- 場地/作業規劃
- Tandem Lift Crane
- Automated RMG Crane
- Autogate
- 岸電系統
- 太陽能光電板
- LED
- RFID
- 電動車
- 綠建築
- 原生樹種保留並設綠帶



Green Terminal :

- 櫃場底層採用環保再生材料
- 廢水回收再利用
- 廢油處理池

Supply Chain Network Re-design

The Supply Chain's Impact on Profitability and Sustainability

- It is the best place to impact both profitability and sustainability
 - After products and manufacturing technology...
 - The SC network determines ~80% of the total cost
 - ***Determines the majority of sustainability impact***

"There is still time to avoid the worst impacts of climate change, if we act now and act internationally"

**Lord Stern ,Former World Bank
Chief Economist**



2012 Green Freight Taiwan Seminar

綠色物流台灣國際研討會 Taipei, Taiwan

- **主辦單位**: 經濟部商業司
- **執行單位**: 台北市電腦商業同業公會
- **協辦單位**: 相關產學界公協會
- **會議時間**: 2012年 8月16日
- **會議地點**: 台灣科技大學 國際會議廳

Welcome to join us!!