

# 水足跡發展與相關國際標準



財團法人台灣產業服務基金會

永續管理與創新技術組

許國榮 協理

中華民國 101 年 10 月 5 日

# 簡報大綱

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水足跡發展趨勢

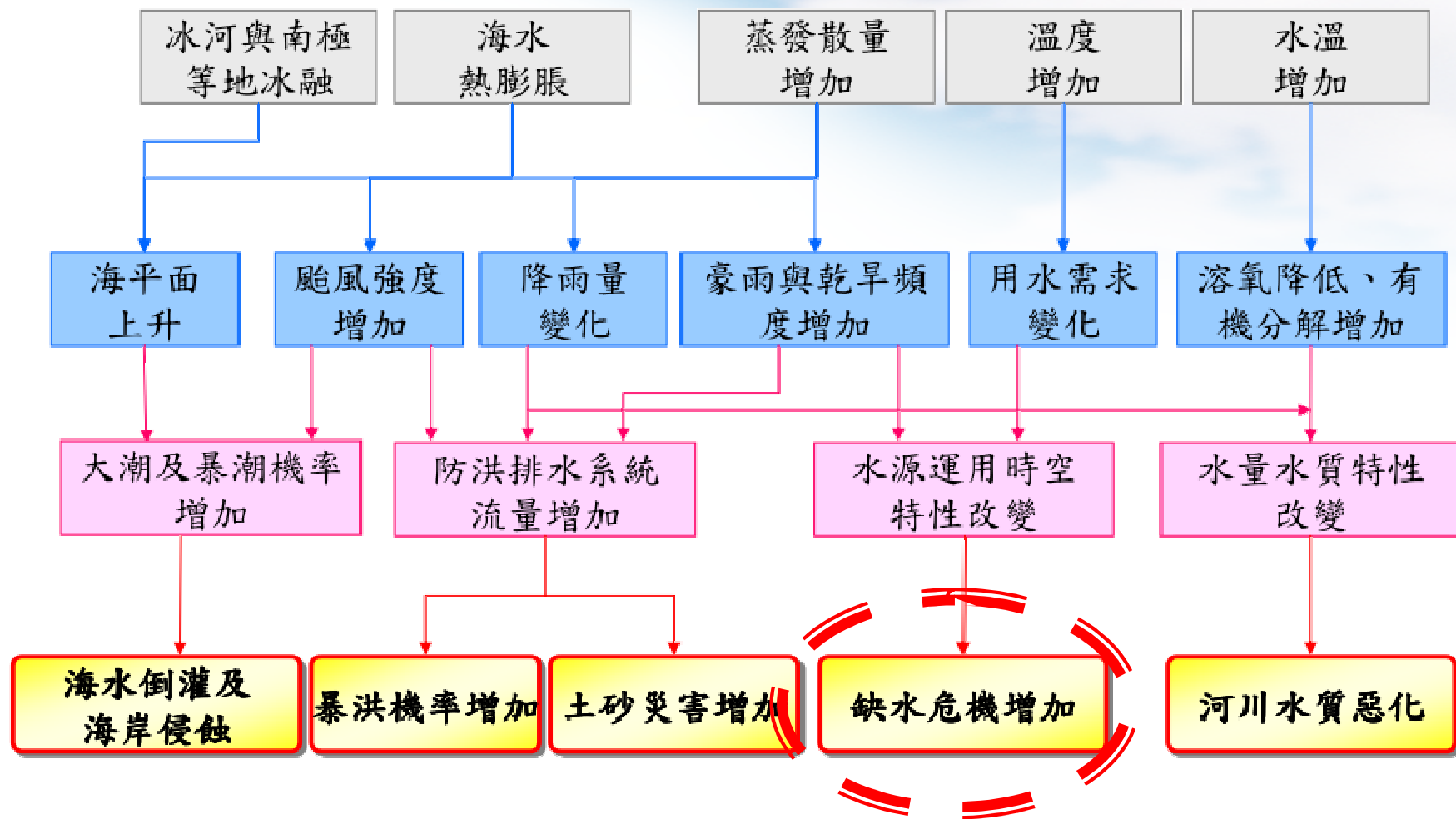
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水足跡相關國際標準

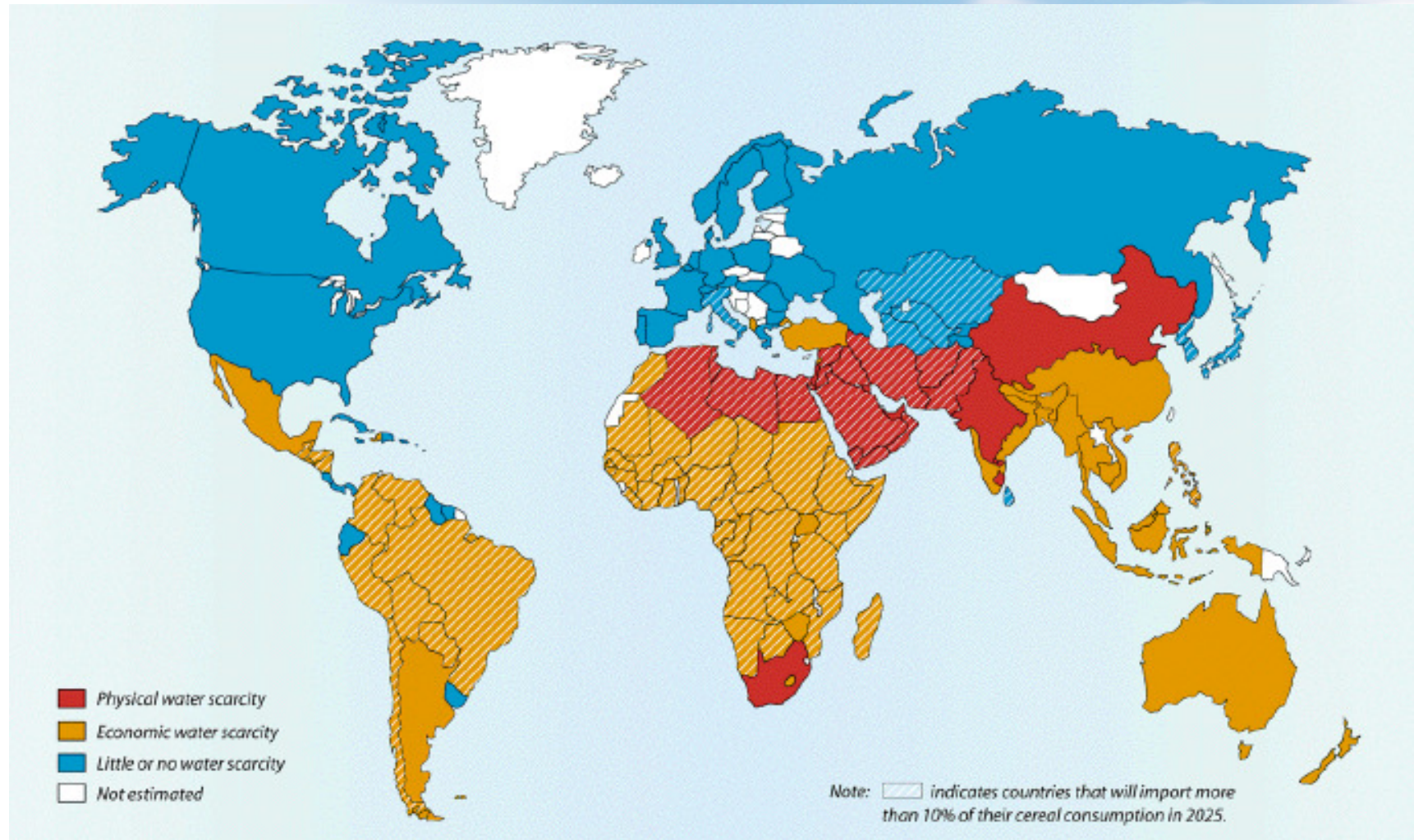
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結語

## ■ 氣候變遷導致的水資源短缺



## ■ 2025年預測全球水缺乏情況



資料來源: International Water Management Institute, 2000

This is a **global average** and **aggregate** number. Policy decisions should be taken on the basis of:

1. Actual water footprint of certain coffee at the precise production location.
2. Ratio green/blue/grey water footprint.
3. Local impacts of the water footprint based on local vulnerability and scarcity.



[Hoekstra & Chapagain, 2008]



[Hoekstra & Chapagain, 2008]



[Hoekstra & Chapagain, 2008]



[Hoekstra & Chapagain, 2008]

## Water Footprint of a 500-mL Coca-Cola in Dongen, the Netherlands

Total Water Footprint  
35 L

**Manufacturing:** Processes, Components

— 0.41 L



100% Blue Water

**Packaging:** PET Bottle, HDPE Closure, PP Label, Tray Carton, Tray Shrinkfilm, Pallet Stretch Wrap, Pallet

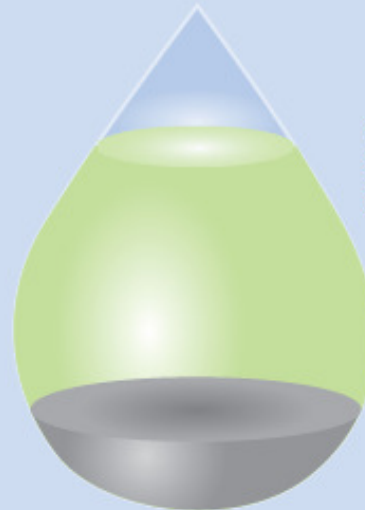
— 7 L



4% Blue Water  
13% Green Water  
83% Grey Water

**Ingredients:** Sugar Beet, Phosphoric Acid, Caffeine, Caramel, CO<sub>2</sub>

— 28 L



28% Blue Water  
52% Green Water  
20% Grey Water

**Blue Water:** water taken from surface water and groundwater (rivers, lakes, and aquifers)

**Green Water:** water taken from soil moisture, derived from rainwater, by growing crops

**Grey Water:** an indicator of the amount of water required to clean water pollution created, for example, by the use of fertilizer



1瓶500ml可樂之水足跡為35 L

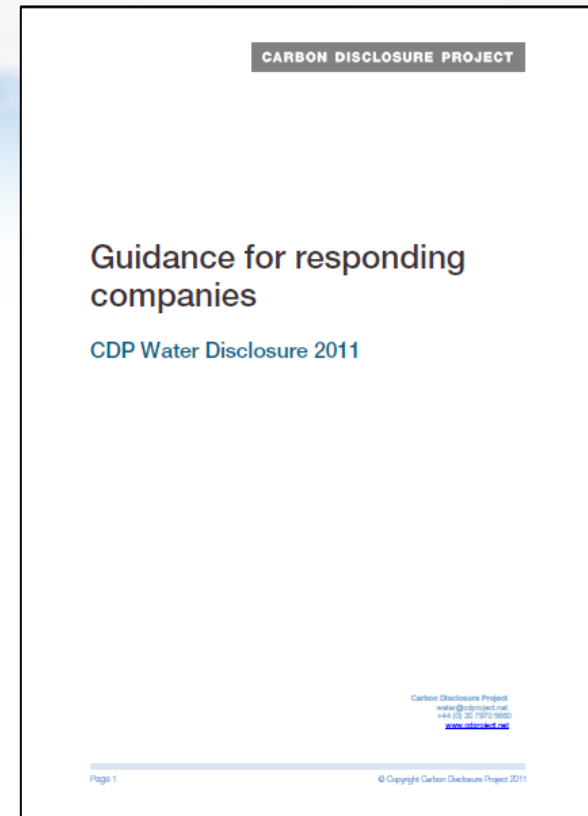


## ■ 全球關注企業水資源消耗與資訊透明度

- ❖ 國際組織在碳揭露議題後，積極倡議各界應重視水資源的管理與風險。
- ❖ 包括世界自然基金會(WWF)，及英國食品道德委員會(FEC)與相關永續組織，提議要求**食品與飲料等產品應標示用水資訊**，提供消費者參考。
- ❖ CDP則於2010年起展開水資源使用及風險管理的調查，主動瞭解對於企業的投資風險及其商業機會。

## ■ CDP Water Disclosure Project

- 於2003年發起的「碳揭露專案(The Carbon Disclosure Project, CDP)」，是一個獨立的非營利組織，是由534個管理資產總額達64兆美元的投資機構與60個採購組織(如Pepsi, Cadbury, Walmart)共同發起，該組織每年邀請全球數千家大企業揭露其**有關環境及氣候變遷之風險與機遇**。
- 於2010年，CDP展開「水揭露專案(CDP Water Disclosure Project)」，**首先針對全球用水強度前300大企業，調查水資源使用情形**，對象涵括化學業、食品與飲料業、消費性產品業、藥品業、發電業與半導體製造業等產業。



# CDP Water Disclosure Project 調查對象

CDP Water Disclosure 2010 Information Request

## Important Information

The 302 companies from the Global 500 in these sectors (and which this information request has been sent to) are:

3M	Carrefour	EOG Resources	INPEX	Northrop Grumman	Southern
ABB	Caterpillar	Ericsson	Intel	Novartis	Southern Copper Corporation
Abbott Laboratories	Centrica	Eurasian Natural Resources	Israel Chemicals	Novolipetskiy Metallurgicheskiy Kombinat	Southwestern Energy
Abertis Infraestructuras	CEZ	Exelon	ITC	Novo-Nordisk	Staples
ACS Actividades de Construccion y Servicios	Chesapeake Energy	Exxon Mobil	Japan Tobacco	NTPC	Starbucks
Ahold	Cheung Kong	FANUC	Jardine Matheson	Occidental Petroleum	Statoil ASA
Air Liquide	Chevron Corporation	Fast Retailing	Jardine Strategic	OGX Petroleo e Gas Participacoes	Steel Authority of India
Air Products & Chemicals	China Overseas Land & Investment	Fiat	JFE Holdings	Oil & Natural Gas	Sun Hung Kai Properties
Akzo Nobel	China Shenhua Energy	Ford Motor	Johnson & Johnson	Panasonic	Suncor Energy
Allergan	Christian Dior	Formosa Petrochemical	Johnson Controls	PepsiCo	Surgutneftegaz
Alstom	Chubu Electric Power	Fortum	Kansai Electric Power	Pernod Ricard	Syngenta
Altria Group	Cisco Systems	FPL Group	Kellogg Company	Petrobras	Sysco
Ambev - Cia. Bebidas das Americas	CLP Holdings	Freeport-McMoRan Copper & Gold	Kepeco	PetroChina	Taiwan Semiconductor Manufacturing
American Electric Power	CNOOC (Red Chip)	Galp Energia	Kimberly-Clark	Pfizer	Takeda Pharmaceutical
Amgen	Coca-Cola	Gap	Kirin Holdings	PG&E	Talisman Energy
Anadarko Petroleum	Colgate-Palmolive	Gas Natural SDG	Kohl's	Philip Morris International	Target
Anglo American	ConocoPhillips	Gazprom	Komatsu	Polska Grupa Energetyczna	Teck Resources
Anglo Platinum	Corning	Gazprom Neft	Koninklijke Philips Electronic	Posco	Tenaris
Anglogold Ashanti	Costco Wholesale	GDF Suez	Kraft Foods	Potash Corporation of Saskatchewan	Tesco
Anheuser-Busch InBev	CRH	General Dynamics	Kroger	PPR	Teva Pharmaceutical
Apache	CSL	General Electric	Kyocera	Praxair	Texas Instruments
Apple	CVS Caremark	General Mills	L'Oreal	Procter & Gamble	Thyssen Krupp
Applied Materials	Daimler	Gilead Sciences	Lafarge	PTT	TIJX Companies
Arcelor Mittal	Danaher	GlaxoSmithKline	Larsen & Toubro	Public Service Enterprise Group	Tokyo Electric Power
Archer Daniels Midland	Danone	GMK Norilsk Nickel	Linde	Qualcomm	Toshiba
Astellas Pharma	Deere	Goldcorp	Lockheed Martin	Raytheon	Total
AstraZeneca	Dell	Grupo Mexico S.A.B. de CV	Lukoil	Reckitt Benckiser	Toyota Motor
Atlantia	Denso	H&M Hennes & Mauritz	LVMH	Reliance Industries	TransCanada
Automatic Data Processing	Devon Energy	Halliburton	Marathon Oil	Repsol YPF	Transocean
BAE Systems	Diageo	Hang Lung Properties	MasterCard	Research In Motion	Tullow Oil
Barrick Gold	Dominion Resources	Heineken	McDonald's	Richemont	Tyco International
BASF	Dow Chemical	Henderson Land Development	MediaTek	Rio Tinto	Unilever
		Hermes International	Merck & Co.	Roche Holding	United Technologies Corporation
			Metro	Rosneft	Vale
			Mitsubishi	Royal Dutch Shell	Veolia Environnement
			Mitsubishi Electric	RWE	Vinci
			Mitsubishi Estate	SABMiller	Visa
			Mitsui & Co	Saint-Gobain	Volkswagen
			Mitsui Fudosan	Samsung Electronics	Walgreens
			Monsanto	Sanofi-Aventis	Wal-Mart de Mexico
			Mosaic Company	Sasol	Wal-Mart Stores
			Motorola	Schlumberger	Waste Management
			National Grid	Schneider Electric	Westphalia
			National Oilwell Varco	Scottish & Southern Energy	
			Nestle		

CDP針對全球前500大，共302家廠商進行企業水揭露調查，包含許多電子國際大廠，如台積電、Samsung、TSMC、IBM、Dell、Nokia、APPLE等

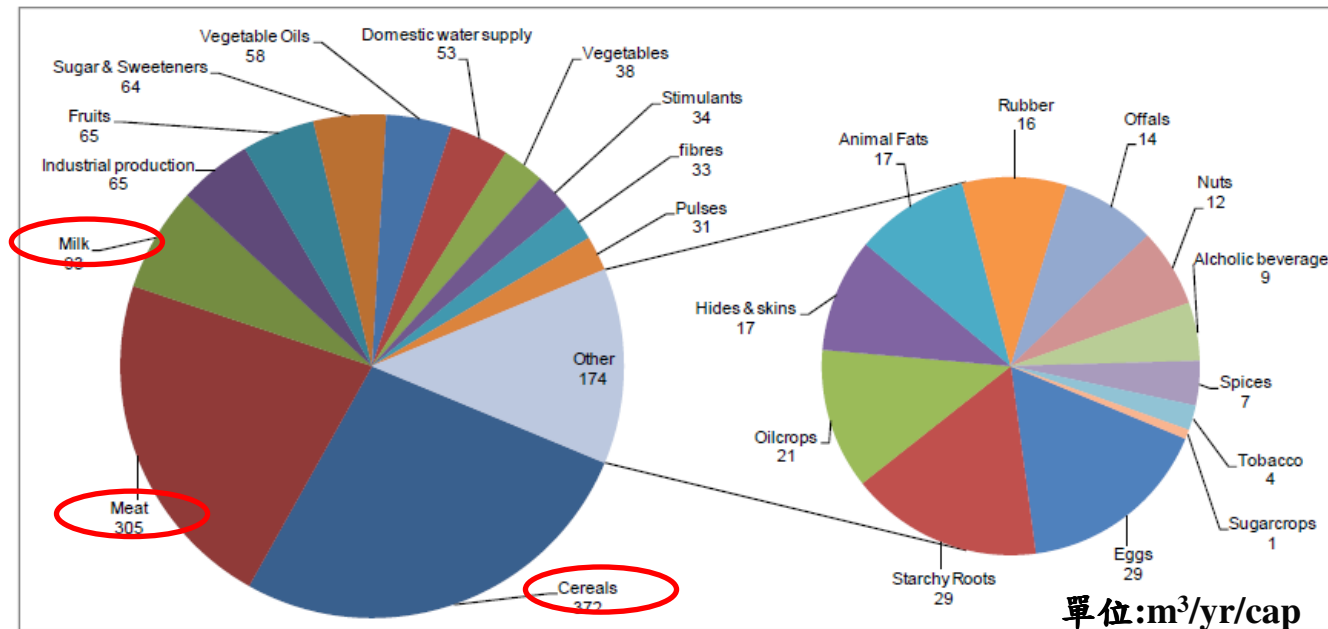
# ■ CDP Water Disclosure Project問卷調查內容

面向	問題
水資源管理與支配	<p><b>1.水資源管理與支配</b></p> <p>1.1用水政策、策略與管理計畫?</p> <p>1.2對於水資源管理會採取的行動或與水議題之相關利害相關者簽訂的協議?</p>
風險與機會	<p><b>2.風險指標</b></p> <p>(自我營運)2.1鑑別有用水壓力區域之營運場址位置?</p> <p>2.2使用何項指標鑑別上述位於用水壓力區域內之營運場址用水風險?</p> <p>2.3說明已鑑別的營運場址佔全部工廠之比例?</p> <p>2.4說明上述計算比例之基礎?</p> <p>(供應鏈) 2.5鑑別來自有用水風險之區域的關鍵高耗水投入?</p> <p><b>3.風險評估</b></p> <p>(自我營運)3.1已暴露的用水風險(現在或未來)，而此風險會對營運方式、收益或支出造成什麼實質的改變?</p> <p>3.2使用何種方法與地理尺度分析營運場址的用水風險?</p> <p>(供應鏈) 3.3要求關鍵供應商報告其用水、風險與管理?</p> <p>3.4供應鏈已暴露的用水風險(現在或未來)，而此風險會對營運方式、收益或支出造成什麼實質的改變?</p>

面向	問題
風險與機會	<p><b>4.對企業衝擊</b> 4.1描述過去5年任何因水有關而造成的損害，以及其對公司財務影響及任何改變。</p> <p><b>5.機會</b> 5.1提供與用水有關的機會，而此機會會實質的改變營運方式、收益或支出？</p> <p><b>6.管理碳排放交易與水交易</b> 6.1鑑別自我營運與供應鏈中於碳排放與水的任何關聯與交易？</p>
水計算	<p><b>7.廢水排放與回收</b> 7.1提供自身營運廠址的廢水排放資料?(不論為量測值或估計值) 7.2提供自身營運廠址的水回收/再利用資料?(不論為量測值或估計值) 7.3描述上述數值的取得方法 7.4有那些水源會受 貴司所排放廢水影響？</p> <p><b>8.放流水</b> 8.1鑑別 貴司放流水排放位置與達到放流水標準所使用的處理方式? 8.2描述於報告期間， 貴司受到任何因未符合放流水法規而受到罰款或處罰? 8.3任何水體與居民受到 貴司放流水顯著的影響？</p> <p><b>9.用水強度</b> 9.1請提供 貴司任何可獲得的財務用水強度值? (US\$/ML) 9.2請提供 貴司任何可獲得的產品用水強度值? (Water unit/Product unit)</p>

## ■ 全球水足跡現況

- ❖ 1996~2005年全球水足跡為9,087 Gm<sup>3</sup>/yr，人均水足跡為1,385 m<sup>3</sup>/yr，**農業產品**消耗約佔92%，工業產品消耗約佔4%，而家庭用水約佔4%。
- ❖ 在所有消費型產品中，**穀類產品**之水足跡所佔比例(27%)為最高，其次依序為肉類產品(22%)、奶製品(7%)。



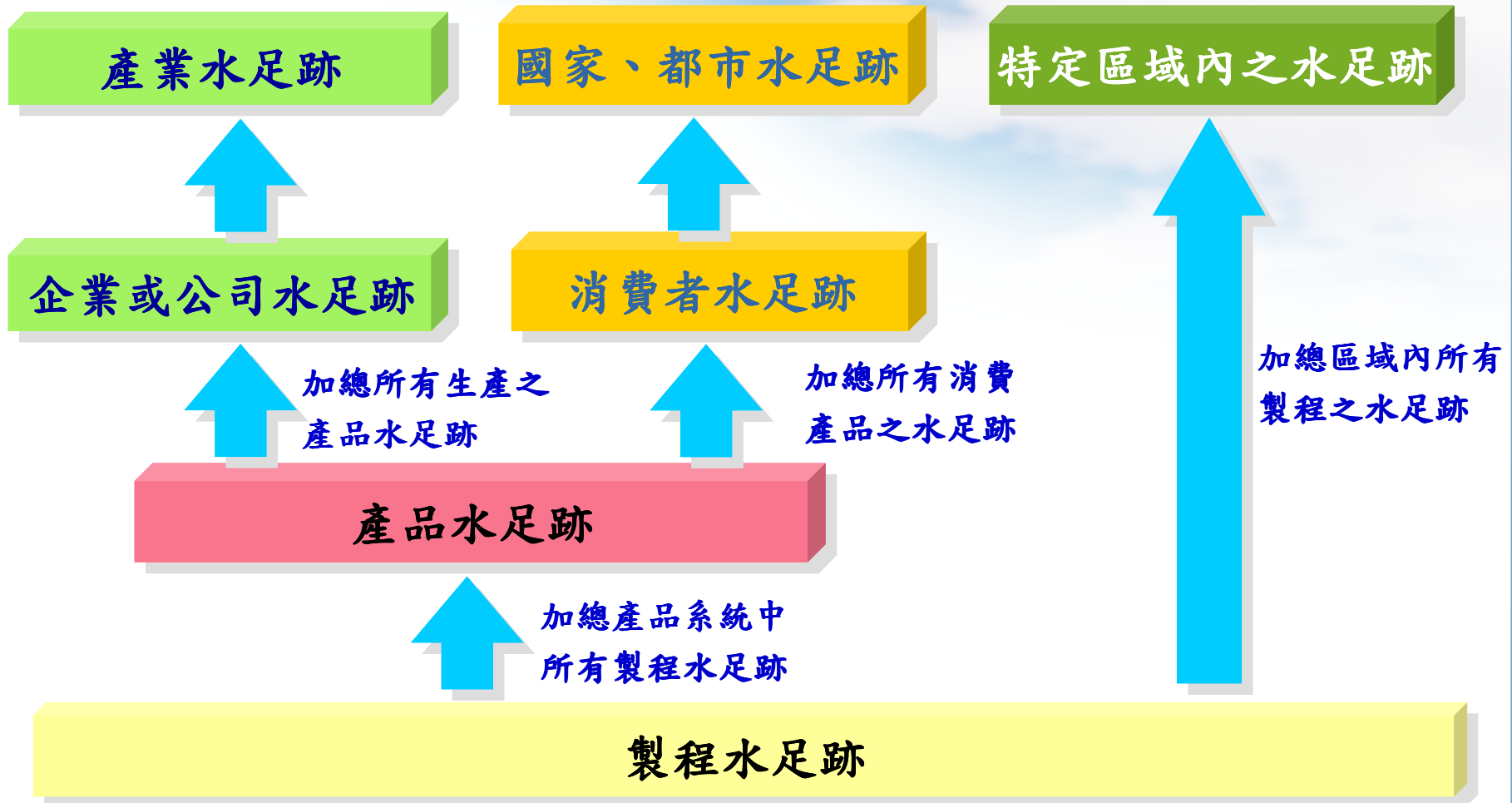
資料來源:Hoekstra & M.M. MEKONNEN, 2011

## ■ 水足跡成為全球焦點



- 目前全球有約**1/3的人口**處在缺水的環境。
- 2005年聯合國估計，2025年前全球**2/3的人口**將有20億，面臨缺水。
- 2009年台灣被聯合國列為**缺水國家排名第18名**，被聯合國列為水資源貧乏地區。
- 國際ISO已成立小組擬訂**ISO 14046**水足跡標準。
- 2011年歐盟發布「水足跡衡量標準」

## ■ 各類水足跡之關聯性



資料來源:Water Footprint Manual,2009

# 簡報大綱

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水足跡發展趨勢

2

水足跡相關國際標準





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結語

# ■ 國際間水管理工具(1/6)

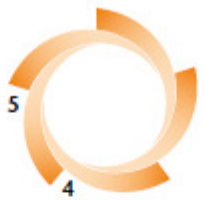





## ■ 國際間水管理工具(2/6)




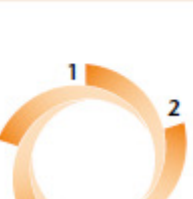
NAME	SPONSORING ORGANIZATION	LEVEL OF APPLICATION	ACTIVITIES ADDRESSED <sup>B</sup>	GEOGRAPHIC FOCUS	PRIMARY CORPORATE USERS	IN USE OR DEVELOPMENT
Alliance for Water Stewardship	Ten board organizations	Site		Global with regional and sectoral distinctions	Corporate Communications, External Relations, Sustainability	First draft released March 2012. In development through mid-2013
BIER Water Footprint Working Group	Beverage Industry Environmental Roundtable (BIER)	Corporate, Site		Global	Operations Sustainability	In use
CDP Water Disclosure	Carbon Disclosure Project (CDP)	Corporate		Global	Corporate Communications, Corporate Finance, Procurement, Sustainability	In use
Ceres Aqua Gauge	Ceres	Corporate		Global	Corporate Communications, Corporate Finance, Sustainability	In use

資料來源:Water for Business, VERSION3, August 2012

## ■ 國際間水管理工具(3/6)

NAME	SPONSORING ORGANIZATION	LEVEL OF APPLICATION	ACTIVITIES ADDRESSED <sup>B</sup>	GEOGRAPHIC FOCUS	PRIMARY CORPORATE USERS	IN USE OR DEVELOPMENT
European Water Stewardship Standard	European Water Partnership	Site		Europe	Corporate Communications, External Relations, Operations, Procurement, Sustainability	In use
GEMI Local Water Tool™	Global Environmental Management Initiative (GEMI)	Site		Global	Corporate Communications, External Relations, Operations, Sustainability	In use
GRI Water Performance Indicators	Global Reporting Initiative (GRI)	Corporate		Global	Corporate Communications, Sustainability	In use
ISO Water footprint: Requirements and Guidelines	International Organization for Standardization (ISO)	Product, processes and organizations		Global	Operations, Sales & Marketing, Sustainability	In development; final publication of the standard is expected in 2014




## ■ 國際間水管理工具(4/6)

NAME	SPONSORING ORGANIZATION	LEVEL OF APPLICATION	ACTIVITIES ADDRESSED <sup>8</sup>	GEOGRAPHIC FOCUS	PRIMARY CORPORATE USERS	IN USE OR DEVELOPMENT
UN CEO Water Mandate	United Nations (UN)	Corporate		Global	Corporate Communications, External Relations, Sustainability	In use
UNEP Finance Initiative: Chief Liquidity Series	United Nations Environment Program (UNEP)	Corporate		Global	Corporate Finance, Sustainability	In use
Water Accounting: An Australian Framework for the Minerals Industry	Minerals Council of Australia (MCA)	Site		Australia	External Relations, Operations, Sustainability	In use
Water Footprint Network	Water Footprint Network (WFN)	Product, processes and organizations		Global with river basins distinctions	Operations, Sustainability	In use (manual and database)  In development through 2012 (tool)

## ■ 國際間水管理工具(5/6)

NAME	SPONSORING ORGANIZATION	LEVEL OF APPLICATION	ACTIVITIES ADDRESSED <sup>8</sup>	GEOGRAPHIC FOCUS	PRIMARY CORPORATE USERS	IN USE OR DEVELOPMENT
Water Impact Index	Veolia Environment Research & Innovation	Product, processes and organizations		Global	Corporate Communications, External Relations, Operations, Sales & Marketing, Sustainability	In use
Water Risk Filter	World Wide Fund for Nature (WWF) and DEG	Corporate		Global	Corporate Communications, Corporate Finance, Sustainability	In use
Water Stewardship Australia	Water Stewardship Australia Limited	Site		Australia	Corporate Communications, External Relations, Operations, Sustainability	In use

## ■ 國際間水管理工具(6/6)

NAME	SPONSORING ORGANIZATION	LEVEL OF APPLICATION	ACTIVITIES ADDRESSED <sup>8</sup>	GEOGRAPHIC FOCUS	PRIMARY CORPORATE USERS	IN USE OR DEVELOPMENT
Water Use Assessment within Life Cycle Assessment	United Nations Environment Program (UNEP) and Society for Environmental Toxicology and Chemistry (SETAC)	Product, processes and organizations		Global	Procurement, Research & Development, Sales & Marketing, Sustainability	In use; phase two runs from 2007 to 2012
WBCSD Global Water Tool	World Business Council on Sustainable Development (WBCSD)	Corporate		Global	Corporate Communications, External Relations, Sustainability	In use
WRI Aqueduct	World Resource Institute (WRI)	Site		Global with river basin distinctions	Corporate Finance, Operations, Sustainability	In use (Orange-Senqu and Yellow River Basins)

## ■ 國際間三個主要水足跡評估指引/標準



**Global Water Tool(GWT)**



<http://www.wbcasd.org/work-program/sector-projects/water/global-water-tool.aspx>



**The Water Footprint  
Assessment Manual:2011**

<http://www.waterfootprint.org/?page=files/WaterFootprintLogo>



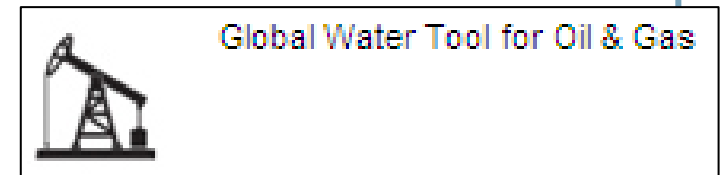
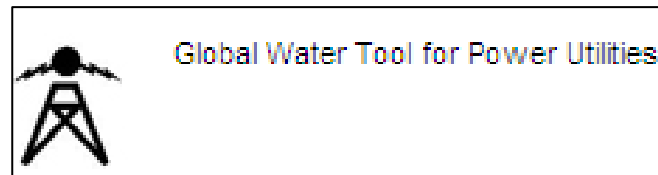
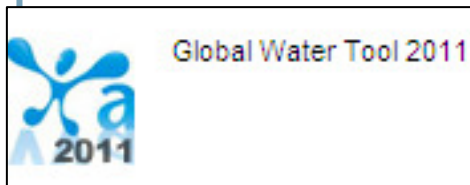
**ISO/CD 14046**

**Life cycle assessment -- Water footprint --  
Requirements and guidelines**

<http://www.iso.org/iso/home.htm>

## ■ 世界企業永續發展協會(WBCSD) -Global Water Tool(GWT)

- ❖ 協助企業將其運作及供應鏈之水資源匱乏風險納入商業決策及評估考量，可作為企業永續管理之工具。2007年發行第一版。
- ❖ 目前已有多家企業使用GWT進行水資源風評估，包括可口可樂、SIMENS、IBM、金百利克拉克、光寶科技、宏碁(ACER)、UPS等知名企業。
- ❖ 另有GWT能源產業版(Power & Utility)、GWT石化版(Oil & Gas)。



# ■世界企業永續發展協會(WBCSD) -Global Water Tool(GWT)

## Global Water Tool 2011

A free and easy to use tool for companies and organizations to map their water use and assess risks relative to their global operations and supply chains.

### What are your water risks?

- How many of your sites are in water-scarce areas? Which sites are at greatest risk? How will that look in the future?
- How many of your suppliers are in countries that lack access to improved water and sanitation?
- How much of your total production is generated from your most at risk sites?

This tool will help you answer these questions and more. It does not provide specific guidance on local situations, which require more in-depth systematic analysis.

### Who is it for?

Companies and organizations operating in multiple countries who need to better understand the water issues in their operations and that of their extended supply chain.

"The Global Water Tool is the first step for any company to make water-informed decisions."  
- Björn Stigson, WBCSD President

## Global Water Tool links

### Global Water Tool 2011

[What does it do?](#)

[How does it work?](#)

[User feedback](#)

[Downloads](#)

## GWT2011 Downloads



Global Water Tool for Oil & Gas

[Read more »](#)



Global Water Tool for Power Utilities

[Read more »](#)



Global Water Tool 2011

[Read more »](#)

## ■ WBCSD-Global Water Tool(GWT)

Global Water Tool

wbcSD water

Start Version 2012.1

↓ Input

Water Inventory Data Form

↑ Output

Country Report Generate Map

Watershed Report Google Earth

Reporting Metrics

## ■ Global Water Tool(GWT)導入實例-光寶科技



人為的開發、資源過度使用以及氣候變遷的影響，使得自然資源的運用成爲企業永續發展的關鍵議題，其中水資源的取得、分配不均以及妥善處理等議題已然成爲企業所不能忽視的營運風險。水資源已儼然成爲一項珍貴的資源，將其納入生產各階段的考量，已成爲水風險管理相當重要的一部分。

光寶科技以世界企業永續協會(WBCSD)2025計畫所聯合開發的全球水資源工具(Global WATER Tool)爲基礎，鑑別出光寶科技位於中國天津及泰國曼谷的廠區，屬將來水資源貧瘠地區。而光寶科技所屬製程均絕大多數爲乾式組裝程序，製造過程對於用水的依存程度並不顯著，經歷年統計總用水量中，95%以上均爲生活用水；也因此生活用水的管理、節約用水及水回收則爲減緩用水風險所對應之控制措施。

而針對供應鏈的管理，光寶科技鑑別出直接供應商(Tier 1) 高用水製程的供應商類別，包含「電鍍製程」、「印刷電路板製程」以及「液晶顯示器製造」，並將其納入重點管理對象。此外，我們也鑑別出座落於未來水資源貧瘠地區之供應商，將是未來在供應鏈水資源管理的重要風險考量項目。

未來光寶科技將持續推動節水計畫，並以2011年爲基準年，預計於2014年達成減量10%爲目標，期以資源使用最小化創造營運效益最大化爲不斷精進之目標。

資料來源:<http://www.liteon.com/Page.aspx?id=6bec8587-5fd4-4155-a848-b6e3b8a3568f>

## ■ Global Water Tool(GWT)導入實例-宏碁

宏碁在2010年應邀加入WBCSD，WBCSD專注於處理商業和永續發展間的議題，在許多國際議題政府間組織的會議或政策諮商上，積極提供企業界的建言。2010年，宏碁透過WBCSD間接參與的領域包括：聯合國氣候變化綱要公約（UNFCCC）2010年12月在墨西哥坎昆舉行的第16屆締約國大會（COP16）、2010年10月在日本名古屋舉行的聯合國生物多樣性公約（Convention on Biological Diversity）第十屆締約國大會（COP10）、2010年9月在瑞典斯德哥爾摩舉行的世界水資源週（World Water Week），以及2010年8月UNFCCC在德國舉行的波昂會談等。

此外，宏碁也陸續參與相關新工具的開發和應用，諸如參與由WBCSD與WRI所共同開發之供應鏈與產品碳排放盤查新標準之試行，並直接回饋意見（請見外部倡議與參與），同時也積極準備引進WBCSD的水工具（Global Water Tool）和生態系統評價企業指引（Guide to Corporate Ecosystem Valuation，簡稱CEV），藉此協助宏碁未來在全球、區域或個別國家相關議題的政策上，發揮更正面的影響力。

資料來源：[http://www.acer-group.com/public/Sustainability/chinese/approach/engagement-2\\_main.htm](http://www.acer-group.com/public/Sustainability/chinese/approach/engagement-2_main.htm)

## ■ Global Water Tool(GWT)導入實例-UPS



- 2010 年度溫室氣體清單獲得瑞士通用公證行 (Societe Generale de Surveillance) 認證並獲得德勤會計師事務所 (Deloitte & Touche LLP) 確認
- 報告了全球企業 1、2 和 3 的二氧化碳排放量
- 報告了溫室氣體排放量新增範圍 3（企業價值鏈）標準的五大類別
- 制定美國環保署 (EPA) 氣候領導者目標，到 2017 年之前使 UPS 運輸指數降低 5 個百分點
- 使用替代燃料/先進技術的車輛行駛路程超過 2 億英里
- 使用世界工商理事會的可持續發展全球水資源工具 (World Business Council for Sustainable Development Global Water Tool) 繪製出全球 UPS 設施的水資源風險

資料來源：<http://www.ups.com/content/tw/zh/bussol/browse/carbon/achievements.html>

# ■ 全球水足跡網絡組織(Water Footprint Network, WFN)

The screenshot shows the homepage of the Water Footprint Network (WFN) website. The browser address bar displays <http://www.waterfootprint.org/?page=files/home>. The page features a blue header with the WFN logo and the text "Water Footprint NETWORK". Below the header, there is a navigation menu on the left with links such as "Introduction", "About WFN", "National Water Footprints", "Corporate Water Footprints", "Your Footprint Calculator", "Product Gallery", "Case Studies", "Publications", "Glossary", "Links", and "Contact". The main content area includes a paragraph explaining the water footprint concept, a diagram showing that 16,000 litres of water are used to produce 1 kg of beef, and a section titled "The relation between consumption and water use" with a quote from Professor Arjen Y. Hoekstra. At the bottom, there are links to publications, including a new 2008 book on "Globalisation of Water" and a 2007 paper on "Water Footprints of Nations".

<http://www.waterfootprint.org/>

# ■ The Water Footprint Assessment Manual

2011年版

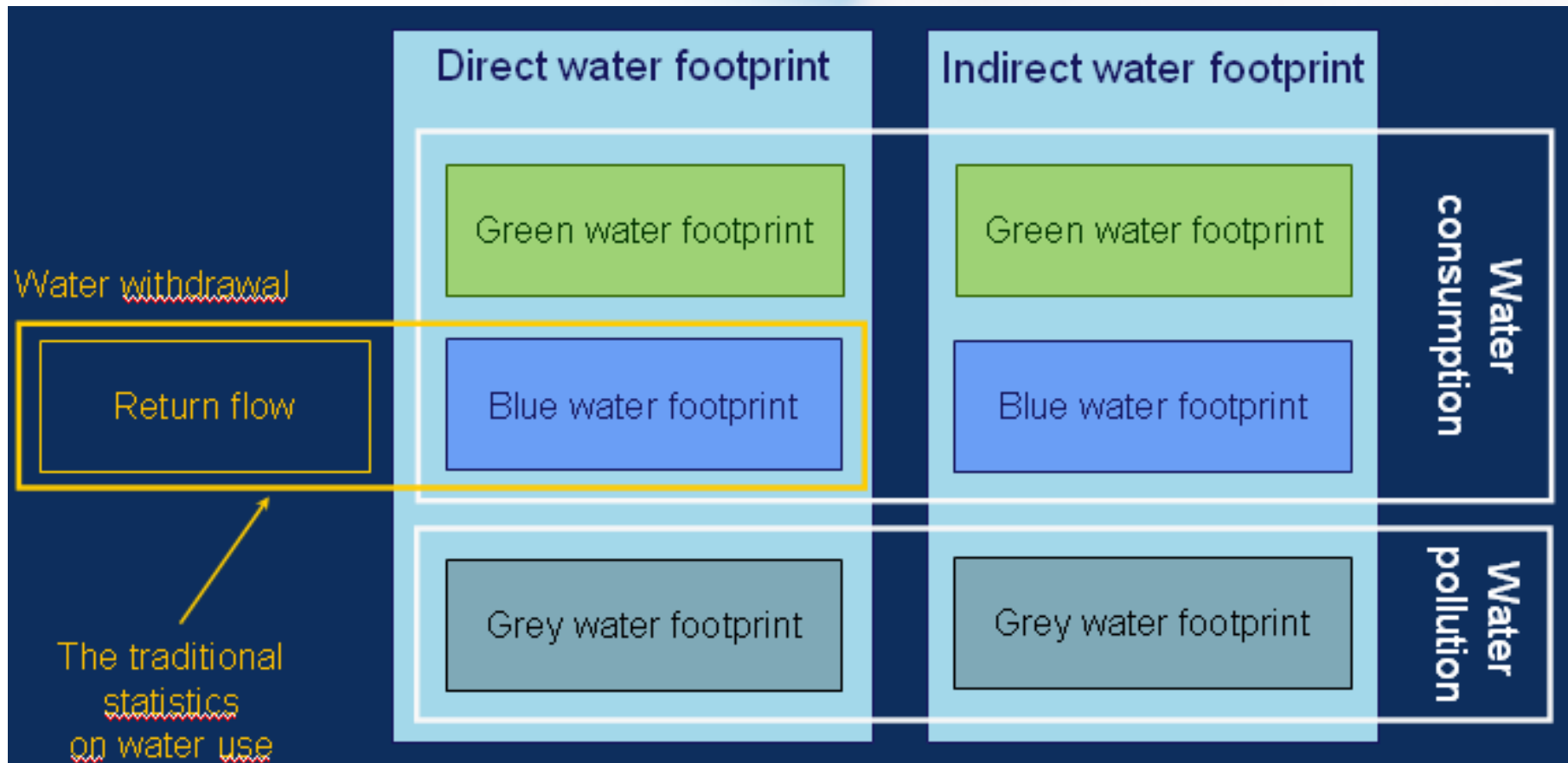


- ❖ 導論
- ❖ 水足跡評估目的與範疇
- ❖ 水足跡計算
- ❖ 水足跡永續評估
- ❖ 水足跡權責區分
- ❖ 限制
- ❖ 未來挑戰
- ❖ 結論



<http://www.waterfootprint.org/>

## ■ Components of a water footprint



<http://www.waterfootprint.org/>

# ■ ISO 14046 Life cycle assessment -- Water footprint -- Requirements and guidelines



International Organization for Standardization  
International Standards for Business, Government and Society  
ISO 14046

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Management and leadership standards  
The ISO portfolio  
FAQs  
Country codes (ISO 3166/MA)

ISO/CD 14046   

Life cycle assessment -- Water footprint -- Requirements and guidelines

General information

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# ■ ISO 14046 Life cycle assessment -- Water footprint -- Requirements and guidelines



資料來源:DNV,2012

# 簡報大綱

1

水足跡發展趨勢

2

水足跡相關國際標準

3

結語

## ■ 水資源短缺的因應對策

- ❖ 正視水資源短缺並以新思維因應。
- ❖ 突破水源供應限制。
- ❖ **降低用水需求量。**
- ❖ **擴大水資源的回流與回收再利用。**
- ❖ 建立缺水風險評估、管理制度。
- ❖ 將「**產品水足跡**」盤查納入環境管理系統，以達到有效擬定節水策略，全面提昇整體水資源運用效率之目的。

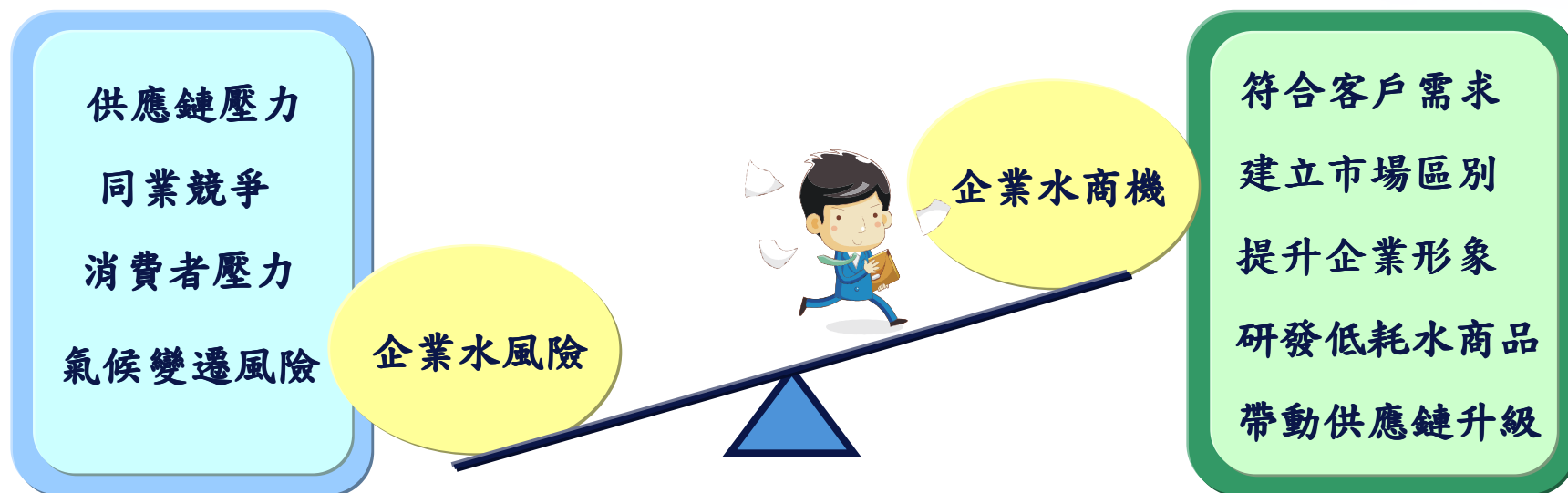
## ■ 產品水足跡盤查執行效益

- ❖ 創造產品的差異化。
- ❖ 提升企業的品牌與聲譽。
- ❖ 引發大眾/客戶關注敦促企業汲營於減量。
- ❖ 藉由綠色行動使水資源永續，開創綠色價值與**落實企業社會責任**。



## ■ 產品水足跡盤查執行策略

- ❖ 水足跡運用虛擬水之概念可有助於釐清水資源實際使用狀況，並可運用**國與國的貿易關係**，降低整體全球用水量。
- ❖ 水足跡觀念已日漸成熟，相關組織已公布計算手冊，**國際標準組織(ISO)**亦開始建立計算標準，建議公部門及企業儘早準備，將此議題納入水資源管理之重要目標。



# 水足跡只是企業永續發展的一部份!



# Thank You !



永續管理與創新技術組

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