

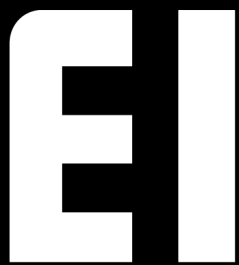


REPORT: ET ASIA-PACIFIC 300 2011 CARBON RANKINGS

Environmental Investment Organisation

Where the needs of the future meet the practicalities of the present





WHO WE ARE

ENVIRONMENTAL INVESTMENT ORGANISATION

An independent non-profit research organisation
promoting ecological investment systems

WHAT WE DO

ENVIRONMENTAL TRACKING

ET Carbon Rankings

creating public pressure through the “spotlight effect”

ET Index Series

creating share price incentive through supply & demand pressure

ET Engagement

engaging with companies to improve standards of disclosure & lower emissions

WHY WE DO IT

designed specifically to **reduce**
global corporate **Greenhouse Gas emissions**



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The Environmental Investment Organisation (EIO) is an independent non-profit body that seeks to improve the environmental 'output' of the financial system. In recent years this mandate has been focused almost entirely on the need to tackle the climate crisis.



ET Asia-Pacific 300 Carbon Rankings 2011 Report

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Foreword

Dear Reader,

Welcome to the ET Asia-Pacific 300 Report, one in a series of Regional Carbon Ranking Reports being released this week and complimenting the release of the ET Global 800 on the 1.11.11.

I think we can all agree that our rapidly changing and interconnected world is full of complex ecological, economic, social and health problems amongst many others. 'Progress' is clearly a very uneven and unequal process, but such has been the fate of humanity since the beginning of documented history.

The EIO does not claim to have a solution to any of the aforementioned problems. Instead, its sole focus is to prevent a problem that we have hardly seen the beginning of, but which, if allowed to spiral out of control, is almost guaranteed to make every other problem worse.

No less an authority than the US Department of Defense has described the likely consequences of severe climate change as a "threat multiplier". In plain language, whatever problems we already have, and no-one could overstate them, a climate calamity could prove one complex problem too many.

Some may confidently predict our ability to adapt, but that theory has never been applied in practice to a planet made up of nearly 200 independent nation states and 7 billion people, and rising.

Perhaps the greatest risk we face in dealing with this situation is the delusion that our current global political system is guaranteed to solve this problem. It is not.

So, is it possible to turn this impending disaster on its head and galvanise the entire global business and financial system in a new direction? Many individuals are already 'doing their bit' on multiple fronts all around the world. Progressive corporations and organisations are already making great efforts to address not only carbon emissions but broader environmental and human priorities.

But against this giant problem of climate change, surely we need an extra push. Something so in tune with the existing system that it can get right inside, like the famous "Trojan Horse" of ancient history, and put a stop to the madness of human induced climate change before it is too late. For surely the issue here is the time line. If the conclusions of our scientists are to be shown any respect, then there is no more time to emit and massive action is required now.

But what kind of action? Skillful action, if we are to carry people with us. For example, we do not need to decimate beautiful countryside with giant wind turbines when there are hundreds of square miles of empty ocean just waiting to be exploited by offshore wind farms benefiting from economies of scale which can hardly be imagined.



We need to think big and act fast, but not in haste. Every action has trade-offs and we certainly do not want to solve one problem by creating new ones.

Problem solving is as much an Art as a Science and so is the case with the subject matter of this report. In an ideal world every company would be reporting accurate and comprehensive Scope 1, 2 and 3 carbon emissions data. With such information available the ET Carbon Ranking would be able to very effectively reward emission reduction and penalise polluters. However, despite the very serious risks we are taking with our climate system, this information does not exist.

The EIO does not pretend that its system is perfect, or that a perfect system is even possible. It is a pragmatic and practical system working with the latest available data. It is our best effort to order this information in a logical manner. If the ranking and the indexes they are designed for can create incentives for higher universal standards of reporting followed by radical emission reduction strategies, it will have served its purpose. Whatever controversies are encountered in the process will be more than justified by such a result.

On the 4th October 2011 the Greenhouse Gas Protocol's new Scope 3 Corporate Accounting Standard was released. The EIO has always stated that Scope 3 is an essential component of the GHG Reporting process and that once the standard was released our Rankings would be adjusted to incentivise full Scope 3 disclosure.

We have fulfilled this pledge and wasted no time in doing so. The intensity metric now used to compile the Ranking includes a weighting for Scope 3 based on the worst case benchmark company for its broad sector. Additionally, we have rewarded companies over and above their emission intensity according to the number of Scope 3 categories reported.

As stated in my foreword to our first Reports on the ET Europe 300 and ET UK 100 Carbon Rankings, the chasm between public policy, public understanding, corporate behaviour and scientific reality is extraordinary and profound. The need for a practical mechanism to work quickly, circumventing the aforementioned log jam, is immense.

It may be true that “not everything that can be counted, counts, or that everything that counts, can be counted” but we can at least put the numbers we do have to good use.

Michael Gill,

Strategic Director & Founder, The Environmental Investment Organisation

October 2011

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SUMMARY

The ET Carbon Rankings serve the twin purpose of encouraging transparency through making emissions data more publicly accessible, while also laying the foundations for the ET Index Series, a market mechanism designed to tackle emissions within a rapid time-frame.

With the introduction of the long awaited [New Scope 3 Standard](#) from the Greenhouse Gas (GHG) Protocol on the 4th October, the EIO has taken a proactive approach to incentivising companies to adopt this important new standard in GHG Reporting. The finalised standard has been the result of a three year global multi-stakeholders process that included more than 2,300 participants and road-tested by 60 companies in 17 countries.

It has long been the EIO's stated view that Scope 1 & 2 emissions do not in themselves provide an accurate picture of a company's carbon impact and therefore a bold approach needs to be taken in distinguishing between those companies reporting Scope 3 and those that are not.

This latest set of Carbon Rankings build on the methodology established previously for the ET UK 100 and ET Europe 300, launched in April 2011, where companies were placed into one of four Disclosure and Verification categories based on their Scope 1 & 2 emissions, and then ranked by carbon intensity (tonnes of CO₂ equivalent per million US dollars of turnover: tCO₂e/\$M turnover).

Where data is incomplete or not reported, companies are benchmarked against their sectoral competitors using the highest reported emissions intensity for that sector. Companies in each category are then ranked according to their emissions intensity across the three Scopes. Additionally, within their respective Disclosure Categories, companies are advantaged according to the number of Scope 3 categories disclosed, over and above their intensity.

Please see the methodology section for a fuller explanation.

THE RANKINGS ARE BASED ON THE FOLLOWING CORE PRINCIPLES:

- ▶ DATA USED IN THE RANKINGS MUST BE PUBLICLY AVAILABLE AND THEREFORE FULLY TRANSPARENT.
- ▶ IN ORDER TO ADDRESS THE ISSUE OF CLIMATE CHANGE, THE RANKINGS' PRIMARY OBJECTIVE MUST BE TO ENCOURAGE DISCLOSURE.
- ▶ DATA WHICH HAS BEEN VERIFIED BY AN INDEPENDENT THIRD PARTY WILL ALWAYS BE RANKED ABOVE DATA WHICH HAS NOT.
- ▶ COMPANIES HONEST ENOUGH TO DISCLOSE THEIR TOTAL EMISSIONS MUST NOT BE PENALISED FOR DOING SO RELATIVE TO THOSE WHO FAIL TO DISCLOSE.
- ▶ IN ORDER TO BE FULLY EFFECTIVE, THE RANKINGS MUST TAKE INTO ACCOUNT THE FULL SCOPE OF A COMPANY'S CARBON EMISSIONS, INCLUDING SCOPE 3.

EXECUTIVE 5

SUMMARY

Key Findings

- ▶ **12.67% of companies publicly disclose complete and independently verified Scope 1 and 2 emissions data**
- ▶ **75% of companies do not publicly disclose their emissions data**
- ▶ **38 companies report one or more Scope 3 emissions categories**
- ▶ **Only four out of 300 have reported 5 or more Scope 3 categories**
- ▶ **Westpac Banking tops the Asia-Pacific Carbon Ranking as one of only three companies across the entire region with verified Scope 1 & 2 emissions data to report five Scope 3 emissions categories**
- ▶ **The biggest Scope 1 & 2 absolute emitter, for which information was available was Tokyo Electric Power, followed by South Korea based Posco, with emissions of 107,527,000 (tCO₂e) and 71,781,000 (tCO₂e), respectively**

The top three in the 2011 ET Asia-Pacific 300 Carbon Ranking are Westpac Banking, National Australian Bank and Transurban. This is explained due to their being the only companies in the ET Asia-Pacific 300 to disclose five Scope 3 Categories within the ET Carbon Rankings' first Disclosure Category: **Public, Complete and Verified**. It therefore earns them the top spots under the EIO's methodology, which rewards companies for their Scope 3 Disclosure.

Although Kirin Holdings, the Japanese Brewery Group, disclosed eight Scope 3 categories, they do not have their data verified and are, therefore, top of the EIO's second Disclosure Category: **Public, Complete but Unverified**. Had the data been verified it would have been the overall top ranked company within the region.

The top 10 is dominated by eight Australian companies, one Japanese company and one South Korean company. One Taiwanese company, Asutek Computer, makes it into the top 20.

Sony is the top ranked Japanese firm with a combined emissions intensity of 1,078.25 tCO₂e/\$M turnover and comes in 7th place for the region. The next best placed Japanese companies are Sharp and Toshiba, who rank 12th and 13th, respectively.

Posco, LG Electronics and LG lead the way for South Korea and also break into the top 15, ranking 10th, 11th and 14th, respectively.

All of the top 10 companies earn their place as the only companies across the entire region to disclose three or more Scope 3 emissions categories as well as having at least their Scope 1 and 2 emissions data independently verified.

Among those companies that do not report on Scope 3 emissions but do have their Scope 1 & 2 emissions data independently verified, the top performers, i.e. those with the lowest combined Scope 1, 2 & 3 emissions intensity under the EIO's methodology, are Asutek Computer (Taiwan), Samsung C&T (South Korea) and Macquarie Group (Australia) with respective emissions intensities of 0.90, 2.83 and 5.28 tCO₂e/\$M turnover.

In terms of comparative analysis of reporting trends across the region, Australian companies lead by a long way, with 60% of companies disclosing public

EXECUTIVE 6

SUMMARY

and complete information. South Korea comes in a respectable second place, with 35% of companies disclosing complete data. Taiwan comes in 3rd place with 22% of companies reporting complete data and a further 14% of the total having their emissions verified.

Perhaps surprisingly Japan lags in 4th place with only 7% of companies having their data independently verified. To date, no company from Indonesia, Malaysia, Thailand and the Philippines disclose any complete data. However, it should be noted that these companies make up less than 10% of the total ET Asia-Pacific 300 Carbon Ranking Universe, which is based on free-float market capitalisation. They therefore do not benefit from such a large sample size of companies compared to some of the larger economies within the region.

In terms of companies carrying out the verification of emissions data, the market is less concentrated than in Europe, with a total of eight different auditors verifying two or more companies in the sample.

These rankings highlight that carbon reporting in the Asia-Pacific region is, with a few exceptions, highly inconsistent. Only 74 out of 300 companies publicly report complete data in accordance with the GHG protocol, with only 38 reporting on Scope 1, 2 and some Scope 3 emissions and only 19 companies taking the additional step of having at least their Scope 1 & 2 emissions data independently verified.

With a third of companies not reporting any data at all, there is clearly significant room for improvement in the Asia-Pacific emissions reporting landscape.

The ET Carbon Rankings make up the first phase of the Environmental Tracking concept. The EIO would like to use the Rankings to create a series of tradeable ET Indexes, providing the investment community with a mainstream tool to encourage transparency and emission reductions on a global scale. It has already demonstrated the ability of these ET Indexes to track their conventional equivalents, through the launch of its two pilot indexes, the ET Europe 300 and the ET UK 100 earlier this year, based on its previously published rankings. These indexes can be described as a market mechanism designed to lower corporate emissions by influencing a company's share price.

Key Reporting Recommendations

- ▶ **Report Scope 1, 2 & 3 emissions following GHG Protocol guidelines**
- ▶ **Ensure emissions data is publicly available in CSR/Sustainability reports/Integrated Annual report and online**
- ▶ **Have emissions data verified by an independent third party**
- ▶ **Ensure verification statements are easily available to the public**

Know your Scopes!

- ▶ **Scope 1 emissions:** All direct emissions
- ▶ **Scope 2 emissions:** Indirect emissions generated from the purchase of electricity
- ▶ **Scope 3 emissions:** All other indirect emissions, such as distribution of goods, transportation of purchased goods, transportation of waste, disposal of waste, employee commuting, business travel or investments.

CARBON RANKING 7

METHODOLOGY

The ET Carbon Rankings have been designed specifically to encourage disclosure and verification, paving the way for absolute emissions reductions.

In essence, the ET Carbon Ranking methodology follows a three step process based on four information categories, as detailed below.

Step 1: Categorisation

Companies are placed into one of **four data categories**:

-  **1) Public, Complete, Verified**
-  **2) Public, Complete, Unverified**
-  **3) Public, Incomplete**
-  **4) No Public Data**

Step 2: Inference

Wherever data is not complete, which means Scope 1 and 2 have not been reported for the company's entire operations or they have not been expressed in a sufficiently clear manner or there is simply no public data available, a worst case figure is inferred; based on the highest reported emissions intensity by any company within the same sector across the full universe of companies within the ET Carbon Rankings. This is designed specifically to encourage disclosure and to avoid penalising companies honest enough to report their emissions figures.

The same principle is applied but in a slightly different manner to Scope 3 emissions. Because of the controversial nature of Scope 3 emissions - by definition they are not under the ownership or direct control of a company, nor do they always lend themselves to easy calculation or identification, it does not appear logical to the EIO for these emissions to be given equal weight to Scope 1 and 2 emissions, which clearly are the responsibility of the company.

THE CARBON RANKINGS HAVE BEEN DESIGNED SPECIFICALLY TO ENCOURAGE DISCLOSURE AND VERIFICATION

COMPANIES WITH EXTERNALLY VERIFIED DATA WILL ALWAYS FIND THEMSELVES RANKED ABOVE THOSE WITH UNVERIFIED DATA

COMPANIES THAT DO NOT HAVE ANY PUBLICLY AVAILABLE DATA ARE BENCHMARKED AGAINST THE HIGHEST INTENSITY FROM THE WORST PERFORMING COMPANY WITHIN THEIR SECTOR

CARBON RANKING 8

METHODOLOGY

Scope 3 Categories:

Upstream

1. Purchased goods and services
2. Capital goods
3. Fuel- and energy-related activities (not included in scope 1 or scope 2)
4. Upstream transportation and distribution
5. Waste generated in operations
6. Business travel
7. Employee commuting
8. Upstream leased asset

Downstream

9. Downstream transportation and distribution
10. Processing of sold products
11. Use of sold products
12. End-of-life treatment of sold products
13. Downstream leased assets
14. Franchises
15. Investment

The EIO's current approach is to give a **50% weighting** to any **fully reported and verified Scope 3 emission total reported according to the 15 categories of the new Scope 3 standard**. This is then added to the Scope 1 and 2 total that has already been reported. Whenever a company does not report a complete and verified Scope 3 total, exactly the same inference method described for Scope 1 and 2 is employed for Scope 3 emissions.

The company in the relevant sector **across the full universe of ET Rankings** with the highest reported Scope 3 figure is identified and used to infer a figure for the remaining companies, thus avoiding penalising a company for being honest enough to report a high figure. The only route by which a company can avoid having an inferred figure allocated to them is to report its own complete and verified figure, and if that happens to be lower than the existing benchmark, then it gains the advantage of a higher ranking position by virtue of its lower emission total. If it is higher, then all the remaining non disclosing companies are benchmarked against it.

In summary, combined emissions intensity across the three Scopes is calculated according to the following formula: 100% of Scope 1 & 2 emissions intensity (disclosed or inferred) + 50% of Scope 3 emissions intensity (disclosed or inferred).

Step 3: Ranking

Once companies have been categorised according to the completeness and verification of their Scope 1 & 2 data, they are firstly ranked according to the number of Scope 3 categories disclosed.

Secondly, companies are ranked within the Disclosure Categories, according to their combined emissions intensity across the three Scopes. Please refer to the inference method as described in the previous section for detail on how companies not providing complete data are treated.

IT IS KEY THAT SCOPE 3 EMISSIONS ARE IDENTIFIED, REPORTED AND ULTIMATELY REDUCED

CARBON RANKING 9

METHODOLOGY

Accounting for size

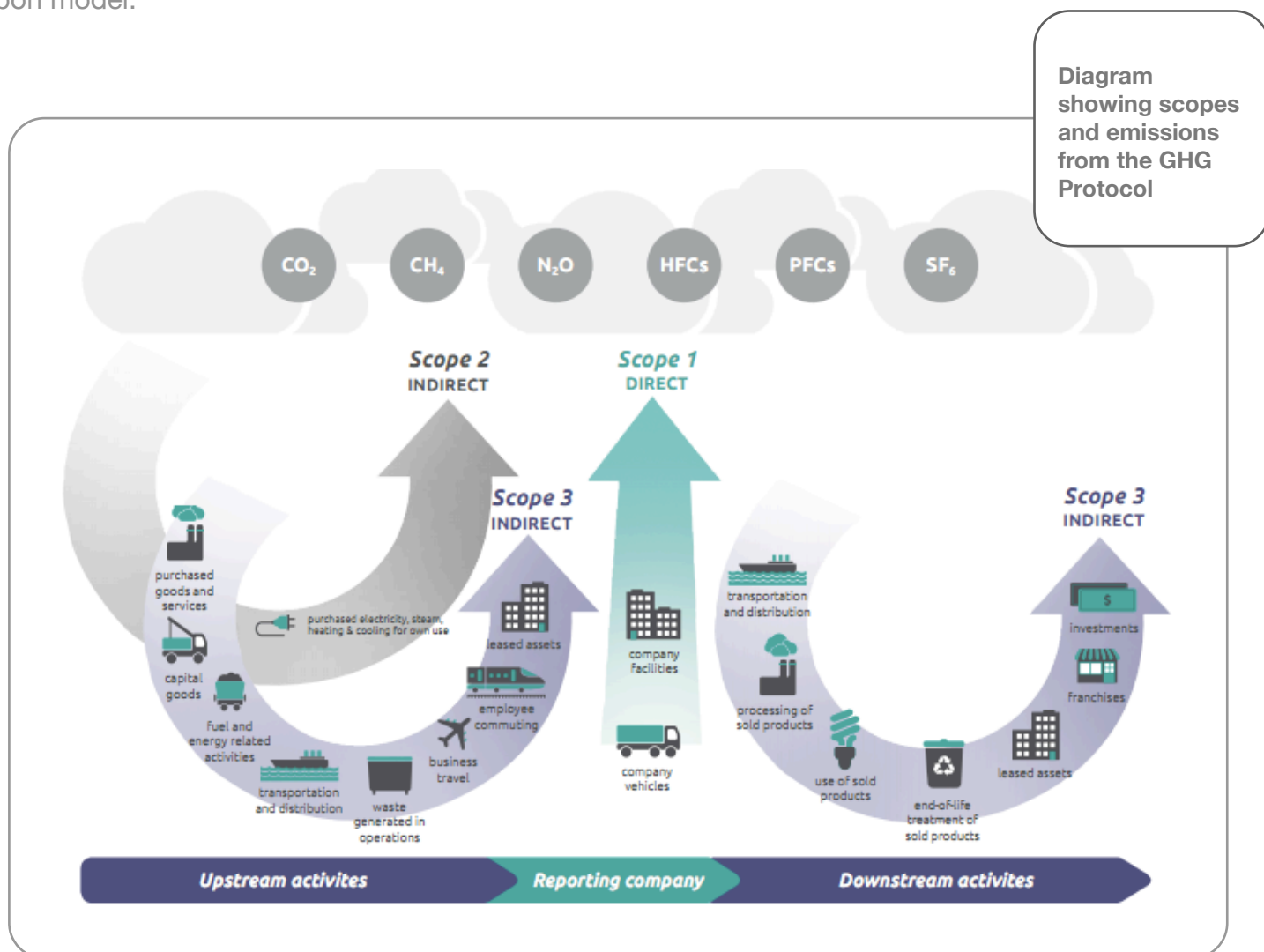
Emissions intensity is calculated using turnover figures from the same financial year as their latest publicly available (at time of publication) reported emissions.

Whilst there is no universally accepted system of establishing relative company size, turnover is generally accepted within the field of carbon accounting as a reasonable metric to determine company size.

Where one or more companies have the same emissions intensity within the Rankings, smaller market capitalisation is given an advantage. The justification for this is simple: larger companies have greater resources to both improve their reporting and realign their business towards a low carbon model.

FOR A COMPLETE EXPLANATION OF THE METHODOLOGY BEHIND THE ET CARBON RANKINGS PLEASE VISIT EIO.ORG.UK

Diagram showing scopes and emissions from the GHG Protocol

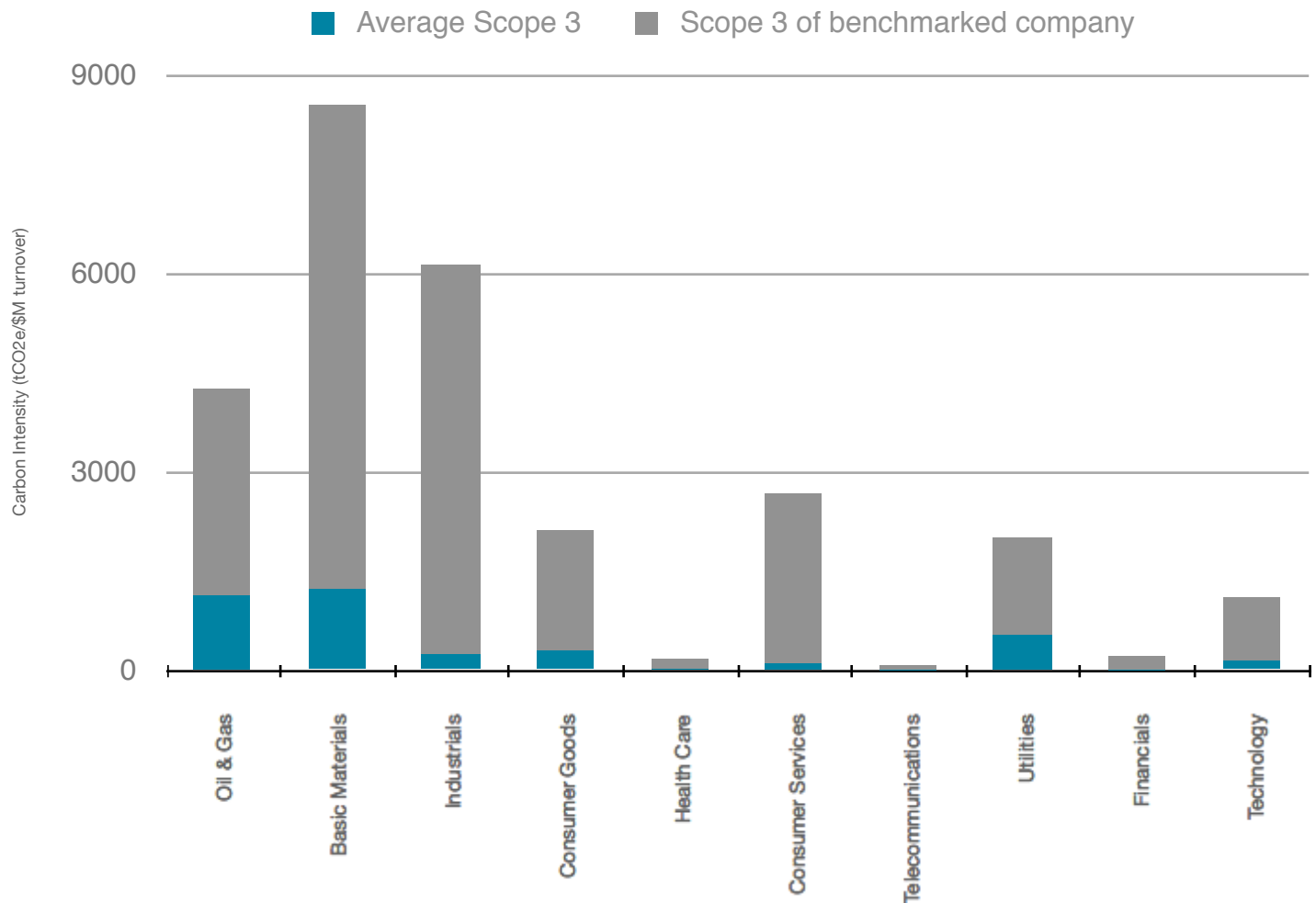


SPOTLIGHT ON 10

SCOPE 3

Global Scope 3 Analysis

Figure 1.



Global Scope 3 Benchmark companies

Figure 2.

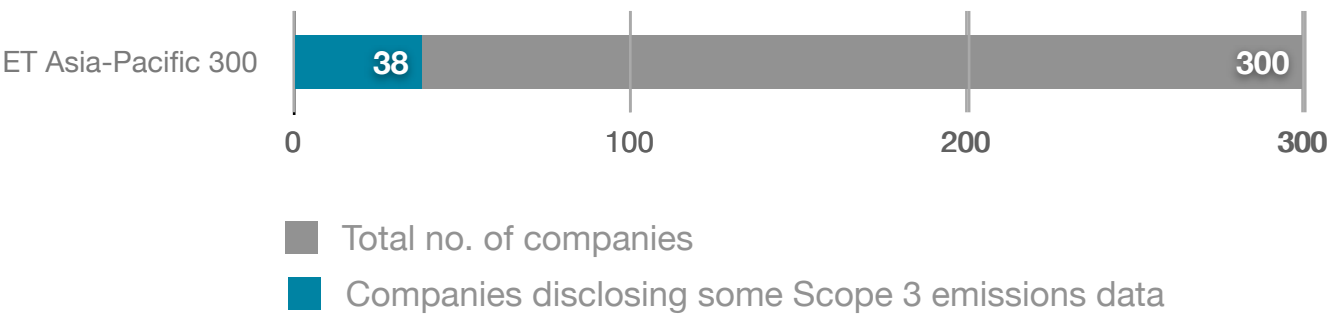
Sector	Benchmark Company Name	No. of Scope 3 Categories Disclosed	Scope 3 Intensity	Sector Scope 3 Intensity Average
Oil & Gas	OMV	1	4,246.31	1,133.87
Basic Materials	Rio Tinto	3	8,547.13	1,222.48
Industrials	Delta Electronics	1	6,130.53	238.84
Consumer Goods	Reckitt Benckiser Group	4	2,115.76	289.92
Health Care	Baxter Int.	6	166.90	19.50
Consumer Services	IC Hotels Group	4	2,665.29	101.85
Telecommunications	Sprint Nextel	2	64.51	6.02
Utilities	RWE	3	1,998.50	536.19
Financials	British Land	4	206.53	7.76
Technology	Motorola Mobility	4	1,103.38	141.30

SPOTLIGHT ON 11

SCOPE 3

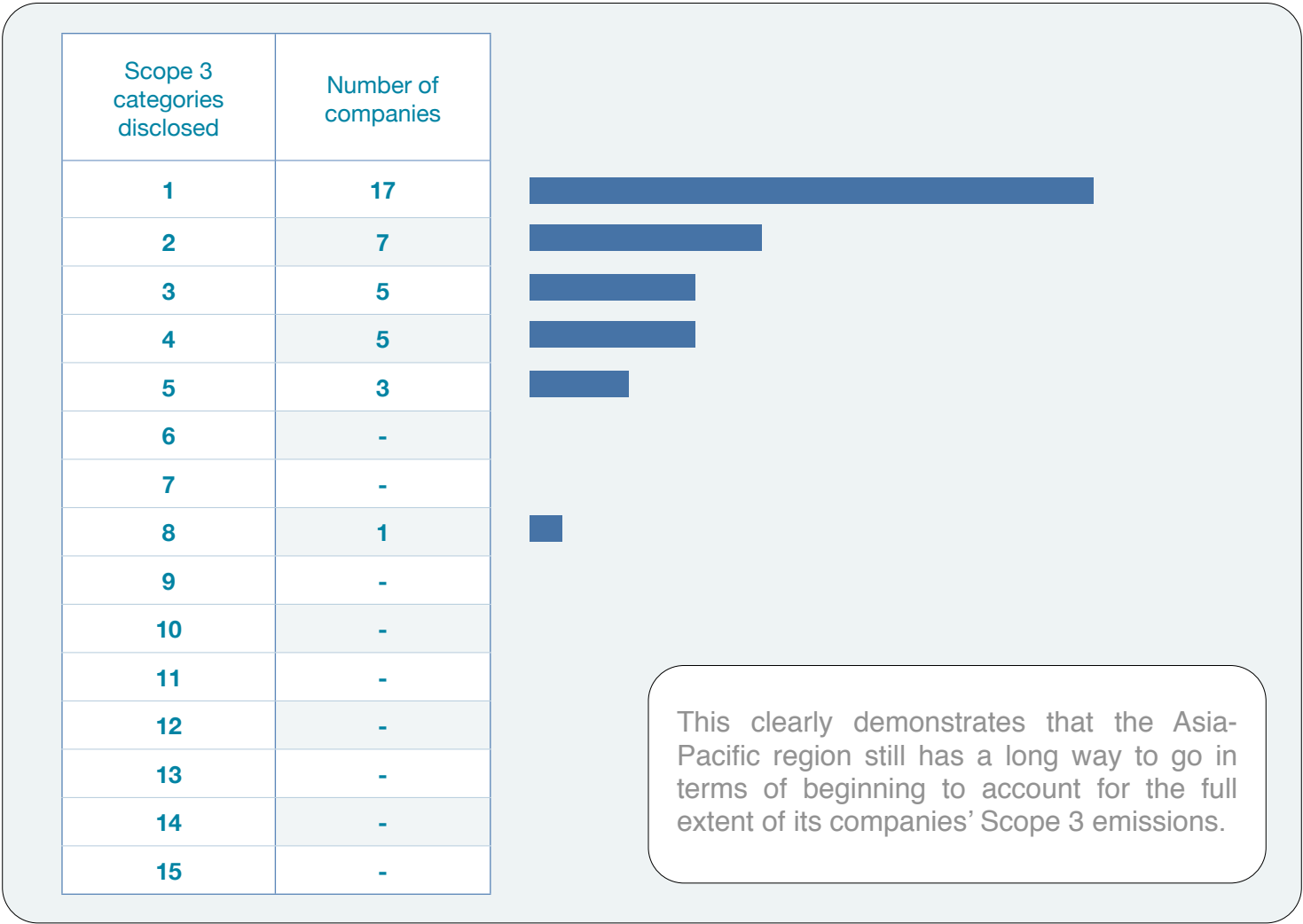
Asia-Pacific 300 Scope 3 Analysis

Figure 3.



Asia-Pacific 300 Extent of Scope 3 Disclosure

Figure 4.



INFERENCE: SCOPE 3

Figure 5.

As these three companies from the **Basic Materials** sector fail to disclose all 15 Scope 3 categories as defined by the GHG Protocol Corporate Value Chain (Scope 3) Standard, their disclosed Scope 3 figures are considered to be incomplete, and therefore they are **given an inferred Scope 3 figure**.

Disclosure & Verification status	Carbon Rank	Company Name	No. of S3 Categories Disclosed	Total Scope 3 Emissions	Disclosed Scope 3 Intensity	Inferred Scope 3 Intensity
No Public Data	287	BANPU	-	No Public Data	-	8,547.13
No Public Data	288	BUMI RESOURCES	-	No Public Data	-	8,547.13
No Public Data	289	ADARO ENERGY	-	No Public Data	-	8,547.13

Rio Tinto is one of the Scope 3 benchmark companies for the **ET Global Universe**, which means it is the company with the highest disclosed Scope 3 intensity within the **Basic Materials** sector.

Sector	Benchmark Company Name	Scope 3 Intensity
Oil & Gas	OMV	4,246.31
Basic Materials	Rio Tinto	8,547.13
Industrials	Delta Electronics	6,130.53
Consumer Goods	Reckitt Benckiser Group	2,115.76
Health Care	Baxter Int.	166.90
Consumer Services	IC Hotels Group	2,665.29
Telecommunications	Sprint Nextel	64.51
Utilities	RWE	1,998.50
Financials	British Land	206.53
Technology	Motorola Mobility	1,103.38

INFERENCE: SCOPE 1 & 2

Figure 6.

American Electric Power is the company with the highest emissions intensity disclosing complete data within the Electricity Industry across the entire **ET Global Universe**.

Disclosure & Verification status	Carbon Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Emissions Intensity (tCO ₂ e/\$M turnover)	No. of S3 Categories Disclosed
Complete & Unverified	126	Potash Corporation	10,315,000.00	1,518.86	-
Complete & Unverified	127	Xcel Energy	80,500,000.00	7,815.68	-
Complete & Unverified	128	American Electric Power	134,000,000.00	9,288.14	-

Disclosure & Verification status	Carbon Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Emissions Intensity (tCO ₂ e/\$M turnover)	No. of S3 Categories Disclosed
Complete & Unverified	199	Kansai Electric Power	No Public Data	9,288.14	-
No Public Data	300	Shikoku Electric Power	No Public Data	9,288.14	-

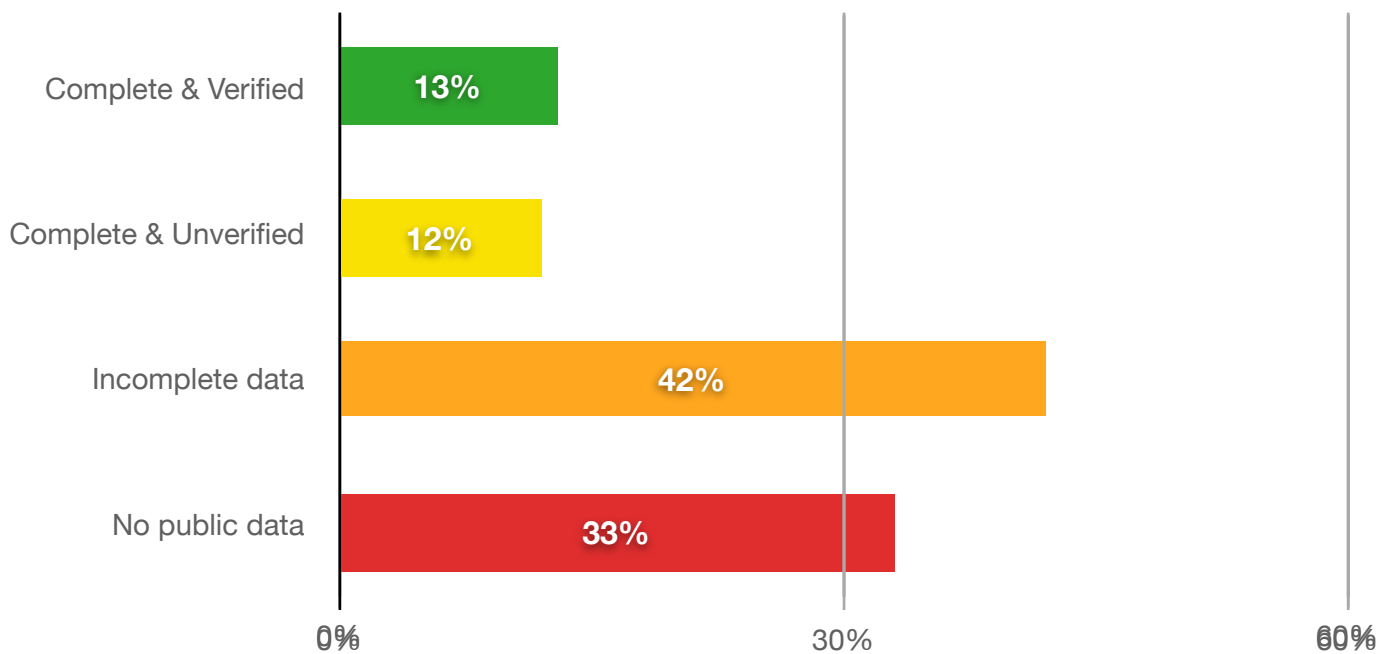
Here, Kansai Electric Power and Shikoku Electric Power have been benchmarked against the highest disclosing company with complete data from the Electricity industry. This means they have been given an *inferred* intensity of 9,288.14 tCO₂e/\$M turnover. This is not an approximation of their emissions but a means of making sure that the highest *disclosing* company in the sector is not penalised for being honest enough to report a large figure.

RANKING 14

ANALYSIS

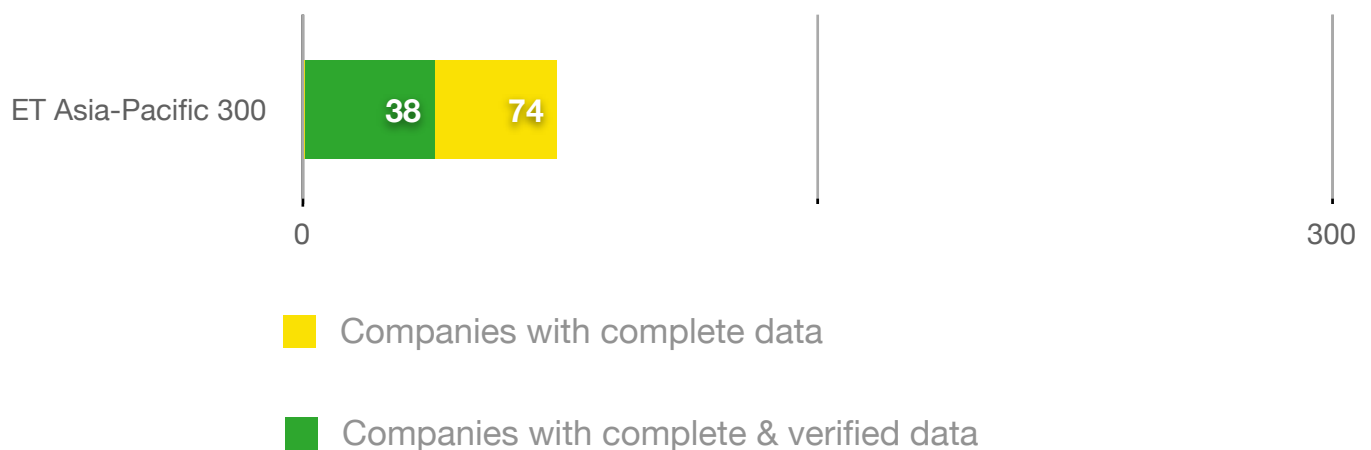
The disclosure and verification landscape of the ET Asia-Pacific 300

Figure 7.



Complete data versus verified data

Figure 8.



RANKING 15

ANALYSIS

ET Asia-Pacific 300 Top 5

Figure 9.

ET Rank	Company Name	S1+2 emissions (tCO ₂ e)	S1+2 Intensity	Scope 3 Categories disclosed	S1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	WESTPAC BANKING	200,165	5.29	5	108.55	Complete & Verified
2	NATIONAL AUS BANK	208,563	5.65	5	108.92	Complete & Verified
3	TRANSURBAN GROUP	46,065	77.23	5	3,142.50	Complete & Verified
4	TELSTRA	1,482,493	71.10	4	103.35	Complete & Verified
5	WESFARMERS	5,515,399	127.48	4	1,460.12	Complete & Verified

Topping the 2011 ET Asia-Pacific 300 Carbon Ranking are Westpac Banking and National Australia Bank, followed by Transurban Group which is a major infrastructure developer. These three companies claim the top three places as they are the only companies in the Asia-Pacific to report five Scope 3 categories and have at least their Scope 1 & 2 emissions data verified.

4th place is occupied by the telecommunications company Telstra, which has a disclosed Scope 1 & 2 intensity of 71.10.

5th place Wesfarmers, one of Australia's largest listed companies and employers, claims its spot by being amongst only five companies in the entire region to have verified Scope 1 & 2 emissions data and disclose 4 or more Scope 3 categories.

(Emissions Intensity is measured in tCO₂e/\$M turnover)

ET Asia-Pacific 300 Bottom 5

Figure 10.

ET Rank	Company Name	S1+2 emissions (tCO ₂ e)	S1+2 Intensity	Scope 3 Categories disclosed	S1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
296	DAEWOO ENGR. & CON.	no public data	4,735.84	-	7,801.11	No public data
297	TAIWAN CEMENT	no public data	4,735.84	-	7,801.11	No public data
298	DAITO TST. CONSTRUCTION	no public data	4,735.84	-	7,801.11	No public data
299	SAMSUNG ENGINEERING	no public data	4,735.84	-	7,801.11	No public data
300	SHIKOKU ELECTRIC POWER	no public data	9,288.14	-	10,287.39	No public data

Last among Asia-Pacific's largest 300 companies is Japanese utilities company Shikoku Electric Power, who have been benchmarked against the highest disclosing company within their sector as they fail to put any data in the public domain. The other four companies occupying the 'bottom 5' are all from the Industrials sector and are only

separated by their respective market sizes; with preference given to the smallest amongst them. These five companies are amongst the 33.3% of Asia-Pacific companies that do not publicly disclose their emissions data.

(Emissions Intensity is measured in tCO₂e/\$M turnover)

ANALYSIS

Highest and Lowest Absolute Emitters:

Scope 1 & 2

Taken from the 74 Companies reporting complete data

Lowest Absolute Emitters (Scope 1 & 2 Only)

Figure 11.

Absolute Rank	ET Rank	Company Name	Scope 1+2 emissions (tCO2e)	Scope 1+2 Intensity	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	16	ASUSTEK COMPUTER	13,190	0.90	552.59	Complete & Verified
2	43	QBE INSURANCE GRP	37,927	3.25	106.51	Complete & Unverified
3	17	LG HHLD & HLTHCARE	44,514	17.66	1,075.54	Complete & Verified
4	20	SAMSUNG C & T	44,869	2.83	3,068.09	Complete & Verified
5	3	TRANSURBAN GROUP	46,065	77.23	3,142.50	Complete & Verified

Figure 11 lists the five lowest absolute emitters from those disclosing complete Scope 1 & 2 emissions data. Verification status is included on the right but does not affect this ranking.

Transurban Group features not only in the top 5 companies by absolute intensity, but also ranks third in the ET Carbon Rankings due to its high level of GHG emissions reporting.

Highest Absolute Emitters (Scope 1 & 2 Only)

Figure 12.

Absolute Rank	ET Rank	Company Name	Scope 1+2 emissions (tCO2e)	Scope 1+2 Intensity	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
70	24	BHP BILLITON	40,800,000	564.42	4,837.98	Complete & Verified
71	38	ALUMINA	44,500,000	2,106.21	6,379.77	Complete & Verified
72	9	RIO TINTO	44,600,000	783.24	5,056.80	Complete & Verified
73	10	POSCO	71,781,000	1,327.09	5,600.66	Complete & Verified
74	66	TOKYO ELEC. POWER	107,527,000	1,778.32	2,777.57	Complete & Unverified

Figure 12 lists the five largest absolute emitters from those disclosing complete Scope 1 & 2 emissions data, ignoring verification status.

All but one of the bottom five companies are from the carbon-intensive Basic Materials sector. Tokyo Electric Power represents the Utilities sector as biggest absolute emitter for which there is data.

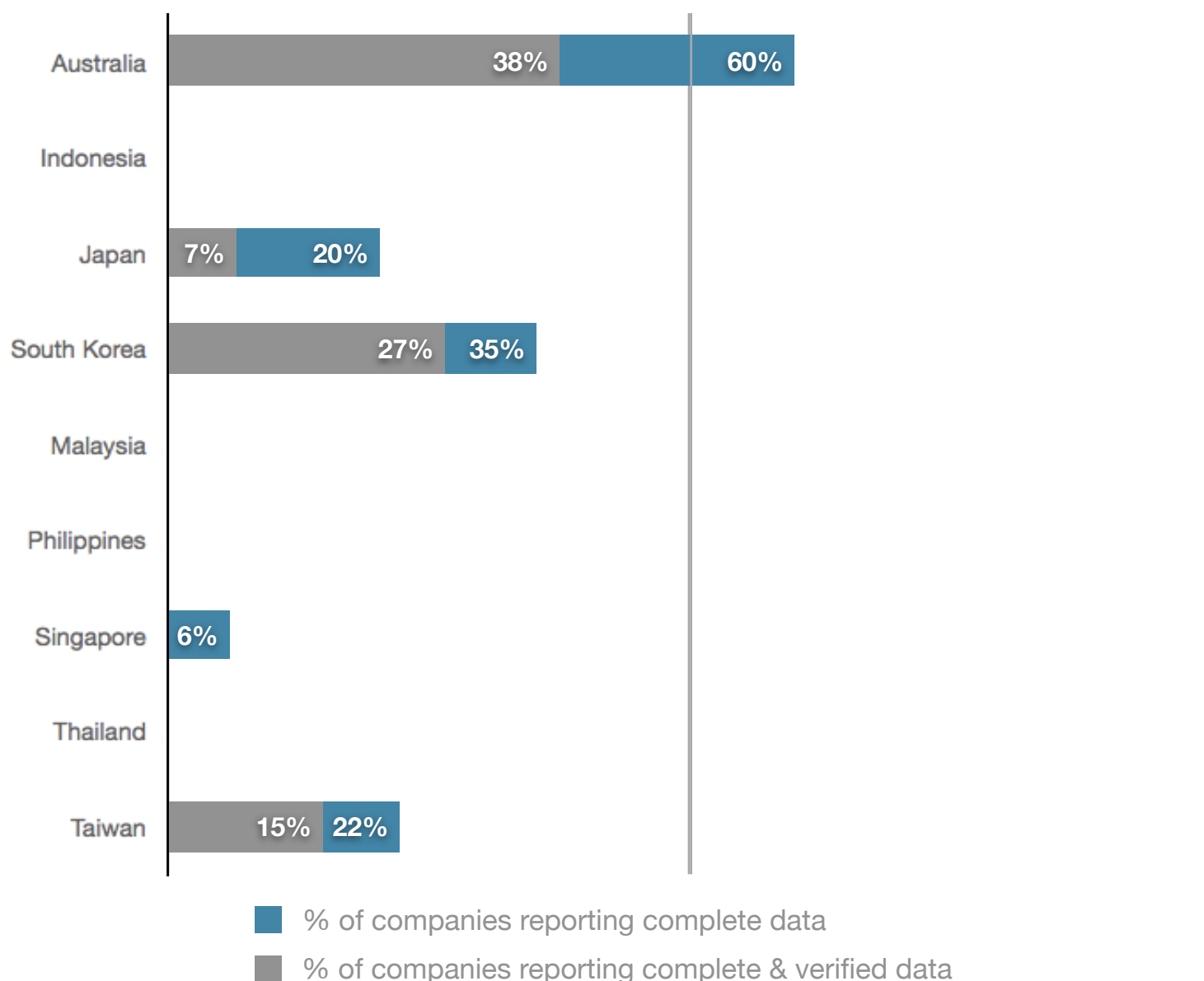
Of note: despite all of the bottom five having large Scope 1 & 2 totals, all but one are reporting Complete & Verified emissions and thereby gain an advantage in the Ranking.

GEOGRAPHICAL ANALYSIS 17

Summary

Countries leading the field of disclosure

Figure 13.



It is interesting to note that Australia is the only country where more than half of companies are reporting complete data. Australia also has the highest rate of companies reporting verified data. Given that the top five companies in the ET Asia-Pacific Carbon Rankings are from Australia as well, this would seem to suggest the country is leading the field within the region.

South Korea and Taiwan both rank above Japan. Four countries in the region have no companies reporting complete or verified data.

This is indicative that though Asia-Pacific is making progress in terms of GHG emissions reporting, there is still a long way to go.

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Spotlight on: Australia

Top 5

Figure 14.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	1	Westpac Banking Corp	200,165	5.29	5	108.55	Complete & Verified
2	2	National Australia Bank	208,563	5.65	5	108.92	Complete & Verified
3	3	Transurban Group	46,065	77.23	5	3,142.50	Complete & Verified
4	4	Telstra	1,482,493	71.10	4	103.35	Complete & Verified
5	5	Wesfarmers	5,515,399	127.48	4	1,460.12	Complete & Verified

Bottom 5

Figure 15.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
36	200	Origin Energy	No Public Data	11,162.43	-	12,161.68	Incomplete
37	210	ASX	No Public Data	366.30	-	469.57	No Public Data
38	217	Westfield Retail Trust	No Public Data	366.30	-	469.57	No Public Data
39	225	AMP	No Public Data	366.30	-	469.57	No Public Data
40	267	WorleyParsons	No Public Data	1,533.52	-	3,656.68	No Public Data

Spotlight on: Indonesia

Top 5

Figure 16.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	135	Astra International	No Public Data	55.19	-	3,120.46	Incomplete data
2	205	Telekomunikasi Indon.	No Public Data	149.35	-	181.61	No public data
3	232	Bank Rakyat Indonesia	No Public Data	366.30	-	469.57	No public data
4	233	Bank Mandiri	No Public Data	366.30	-	469.57	No public data
5	236	Bank Central Asia	No Public Data	366.30	-	469.57	No public data

Bottom 5

Figure 17.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
6	264	United Tractors	No Public Data	229.84	-	3,295.11	No Public Data
7	288	Bumi Resources	No Public Data	2,993.71	-	7,267.28	No Public Data
8	289	Adaro Energy	No Public Data	2,993.71	-	7,267.28	No Public Data
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

GEOGRAPHICAL 19

ANALYSIS

Spotlight on: Japan

Top 5

Figure 14.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	7	Sony	1,617,295	20.37	3	1,078.25	Complete & Verified
2	12	Sharp	1,275,000	43.60	2	1,101.48	Complete & Verified
3	13	Toshiba	3,002,000	43.93	2	3,109.19	Complete & Verified
4	18	Panasonic	5,010,000	63.12	1	1,121.00	Complete & Verified
5	22	Sumitomo Electric Ind.	1,142,000	52.40	1	3,117.67	Complete & Verified

Bottom 5

Figure 15.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
149	273	Odakyu Electric	No Public Data	2,786.43	-	4,119.08	No Public Data
150	274	Kintetsu	No Public Data	2,786.43	-	4,119.08	No Public Data
151	276	Secom	No Public Data	2,007.01	-	5,072.28	No Public Data
152	298	Daito Trust Construction	No Public Data	4,735.84	-	7,801.11	No Public Data
153	300	Shikoku Electric Power	No Public Data	9,288.14	-	10,287.39	No Public Data

Spotlight on: Malaysia

Top 5

Figure 16.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	187	Petronas Chemicals Grp.	No Public Data	2,627.96	-	6,901.53	Incomplete
2	203	Axiata	No Public Data	64.79	-	97.05	No Public Data
3	223	Public Bank	No Public Data	366.30	-	469.57	No Public Data
4	234	CIMB Group Holdings	No Public Data	366.30	-	469.57	No Public Data
5	235	Malayan Banking	No Public Data	366.30	-	469.57	No Public Data

Bottom 5

Figure 17.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
6	258	Tenaga Nasional	No Public Data	2,248.83	-	2,333.99	No Public Data
7	275	Genting	No Public Data	2,786.43	-	4,119.08	No Public Data
8	293	Sime Darby	No Public Data	4,292.54	-	7,357.81	No Public Data
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

GEOGRAPHICAL 20 ANALYSIS

Spotlight on: Philippines

Top 5 Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	84	Ayala Land	No Public Data	366.30	-	469.57	Incomplete
2	126	Aboitiz Power	No Public Data	2,248.83	-	2,333.99	Incomplete
3	201	Philippines LD Telephone	No Public Data	64.79	-	97.05	No Public Data
4	290	Aboitiz Equity Ventures	No Public Data	4,292.54	-	7,357.81	No Public Data
-	-	-	-	-	-	-	-

Bottom 5

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Spotlight on: Singapore

Top 5

Figure 16.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	46	Singapore Telecom	160,096	13.28	1	45.53	Complete & Unverified
2	87	Singapore Exchange	No Public Data	366.30	-	469.57	Incomplete
3	89	Capitaland	No Public Data	366.30	-	469.57	Incomplete
4	154	Keppel	No Public Data	1,533.52	-	3,656.68	Incomplete
5	163	Singapore Airlines	No Public Data	2,786.43	-	4,119.08	Incomplete

Bottom 5

Figure 17.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
13	257	Wilmar International	No Public Data	795.34	-	1,853.22	No Public Data
14	291	Fraser and Neave	No Public Data	4,292.54	-	7,357.81	No Public Data
15	292	Nobel Group	No Public Data	4,292.54	-	7,357.81	No Public Data
16	294	Jardine Matheson Holdings	No Public Data	4,292.54	-	7,357.81	No Public Data
17	295	Jardine Strategic Holdings	No Public Data	4,292.54	-	7,357.81	No Public Data

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Spotlight on: South Korea

Top 5

Figure 14.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO2e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	10	Posco	71,781,000	1,327.09	3	5,600.66	Complete & Verified
2	11	LG Electronics	1,215,000	24.43	2	1,082.31	Complete & Verified
3	14	LG	1,215,000	165.07	2	3,230.34	Complete & Verified
4	17	LG Hdg. & health care	44,514	17.66	1	1,075.54	Complete & Verified
5	20	Samsung C & T	44,869	2.83	1	3,068.09	Complete & Verified

Bottom 5

Figure 15.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO2e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
30	279	GS Holdings	No Public Data	4,705.52	-	6,828.68	No Public Data
31	280	SK Innovation	No Public Data	4,705.52	-	6,828.68	No Public Data
32	283	Honam Petrochemical	No Public Data	2,627.96	-	6,901.53	No Public Data
33	296	Daewoo Engr. & Constr.	No Public Data	4,735.84	-	7,801.11	No Public Data
34	299	Samsung Engineering	No Public Data	4,735.84	-	7,801.11	No Public Data

Spotlight on: Taiwan

Top 5

Figure 16.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO2e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	16	Asustek Computer	13,190	0.90	1	552.59	Complete & Verified
2	27	Advanced Semiconductor Engr.	506,244	188.80	-	740.49	Complete & Verified
3	28	Taiwan Semiconductor MNFG.	4,173,897	290.22	-	841.91	Complete & Verified
4	29	United Microelectronics	1,800,000	415.28	-	966.97	Complete & Verified
5	52	Delta Electronics	430,000	73.23	1	3,138.49	Complete & Unverified

Bottom 5

Figure 17.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO2e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
23	281	Formosa Petrochemical	No public data	4,705.52	-	6,828.68	No Public Data
24	284	Formosa Chemicals & Fibre	No public data	2,627.96	-	6,901.53	No Public Data
25	285	Nan Ya Plastics	No public data	2,627.96	-	6,901.53	No Public Data
26	286	Formosa Plastics	No public data	2,627.96	-	6,901.53	No Public Data
27	297	Taiwan Cement	No public data	4,735.84	-	7,801.11	No Public Data

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Spotlight on: Thailand

Top 5

Figure 18.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	179	PTT Exploration & PRDN.	No Public Data	4,705.52	-	6,828.68	Incomplete
2	193	Siam Cement	No Public Data	4,735.84	-	7,801.11	Incomplete
3	202	Advanced Info Service	No Public Data	64.79	-	97.05	No Public Data
4	221	Bangkok Bank	No Public Data	366.30	-	469.57	No Public Data
5	222	Kasikornbank	No Public Data	366.30	-	469.57	No Public Data

Bottom 5

Figure 19.

Country Rank	ET Rank	Company Name	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
6	228	Siam Commercial Bank	No Public Data	366.30	-	469.57	No Public Data
7	256	Caroen Pokphand Foods	No Public Data	795.34	-	1,853.22	No Public Data
8	282	PTT	No Public Data	4,705.52	-	6,828.68	No Public Data
9	287	Banpu	No Public Data	2,993.71	-	7,267.28	No Public Data
-	-	-	-	-	-	-	-

Intensity is measured as tCO₂e/\$Million turnover

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Asia-Pacific Background

The Kyoto Protocol adopted at the Third Conference of the Parties (COP3) for the Framework Convention on Climate Change in 1997 provides a legally binding commitment to reduce greenhouse gas emissions by developed countries. Japan, Australia and New Zealand ratified the Kyoto Protocol. Under the protocol, the quantified commitment for Japan is a 6% reduction below 1990 levels in the first commitment period from 2008 to 2012. The commitment for Australia is an increase of 8% above 1990 levels and a 0% change of emissions for New Zealand compared to the 1990 levels (UNFCCC 1998).

Japan Emissions Landscape

Japan, being the home-nation to the Kyoto Protocol, plays a key role in the global effort to reducing GHG emissions. Japan is committed to reducing its GHG emissions by 6% during the first commitment period 2008-2012. This commitment to the Kyoto Protocol means that Japan is required to reduce emissions to 1.186 billion tonnes CO₂e a year on average over a five year period beginning in 2008. In the period 2009/10, Japan, the world's fifth largest GHG emitter, fell for the second straight year to 1.209 billion tonnes of CO₂e. This huge cut in GHG emissions meant that Japan achieved a total reduction on 5.6 percent on previous years, 4.1 percent lower than in 1990/91 (Reuters, 2009).

Based on the most recent data published by the UNFCCC, 2009 GHG emissions in Japan were 1,209 Mt CO₂e. The changes in emissions from 1990 to 2009 in Japan correspond to a reduction of 4.5% below 1990 levels (UNFCCC 2011b), which is still 1.5% behind target.

Policy and Measures

Japan has been promoting measures to control GHG emissions since the 1990s. The 2008 revised

UNDER THE KYOTO PROTOCOL JAPAN, AUSTRALIA, AND NEW ZEALAND HAVE TARGETS OF A 6% REDUCTION, 8% INCREASE, AND 0% CHANGE, RESPECTIVELY, FROM 2008 TO 2012, COMPARED TO 1990 LEVELS

JAPAN HAS THE WORLD'S FIFTH LARGEST CO₂E EMISSIONS TOTAL OF 1.209 MT, ALTHOUGH IT REDUCED ITS CARBON EMISSIONS IN 2008 AND 2009 RESPECTIVELY

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TO ACHIEVE ITS KYOTO TARGET, JAPAN HAS PROMOTED THE ADOPTION OF VOLUNTARY GHG REDUCTION INITIATIVES, SUCH AS THE NIPPON KEIDANREN'S "VOLUNTARY ACTION PLAN ON THE ENVIRONMENT"

JAPAN HAS LAUNCHED AN EXPERIMENTAL EMISSIONS TRADING SCHEME TO ENCOURAGE VOLUNTARY, COST EFFECTIVE REDUCTIONS

Kyoto Protocol Target Achievement Plan succeeded previous action programs, policies and outlines in order to stipulate the necessary measures for achieving the Kyoto Protocol's commitment of 6% emission cuts. Japan uses the Kyoto mechanisms to fulfill its commitments; however, as stated in the national communication to the UNFCCC, these mechanisms are intended to be supplementary to the domestic measures developed to reduce GHG emissions.

The Kyoto Protocol Target Achievement Plan focused on the need to develop measures that contribute to the compatibility between the environment and the economy. One of the measures is the promotion and reinforcement of voluntary action plans for businesses to reduce emissions. This includes businesses across the entire spectrum of the industrial, commercial, energy conversion and transport sectors. Japan's Business Federation (Nippon Keidanren) formulated a Voluntary Action Plan on the Environment in 1997 to control GHG emissions (MOEJ 2010). In addition to the Nippon Keidanren Voluntary Action Plan on the Environment, businesses have set up individual voluntary action plans to reduce GHG emissions. Under the voluntary plans, the government expects business operators with significantly large emissions to formulate plans with quantitative targets to control their emissions (MOEJ 2010). In order to support the voluntary CO₂ reduction activities by business operators to ensure their emission reduction targets in a cost-effective way, the government launched an experimental scheme called Japan's Voluntary Emissions Trading Scheme (MOEJ 2011a). Another scheme launched is the Offset Credit (J-VER) Scheme. The J-VER scheme is a verification scheme for credits generated through the reduction/removal by sinks of greenhouse gases carried out via projects in Japan. By utilizing the J-VER scheme, funds for carbon offsetting from individuals, businesses, local governments can be directed towards projects in forest management or local industries (MOEJ 2011b).

As for an environmental tax and pricing GHG emissions, the national communication argued that in order for an environmental tax to reduce

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GHG without imposing a burden and harming the international competitiveness of businesses, more comprehensive studies should be undertaken.

Japan states that it is essential for all major emitting countries to cooperate and make an effort to reduce GHG emissions. It promoted the Cool Earth Partnership which supports mitigation measures, adaptation measures and access to clean energy in developing countries aiming to achieve greenhouse gas emission reductions and economic growth (MOFAJ 2008). The Cool Earth Partnership was replaced by the Hatoyama Initiative announced at the Copenhagen summit in 2009.

Australia

In 2009 GHG emissions in Australia were 546 Mt CO₂e. Emissions in Australia from 1990 to 2009 increased to 30.5% above 1990 levels (UNFCCC 2011a), overshooting the commitment binding target by 22.5%. In 2009, however, the Australian government announced that it was downgrading efforts to combat climate change in the light of the global recession with emissions projected to be 20% above the 1990 base level by 2020.

Policy and Measures

Despite signing the Kyoto Protocol in 1998, Australia has struggled to demonstrate a harmonised commitment toward carbon emissions abatement. Australia is among the countries with the highest total emissions and highest emissions per capita, which is mostly due to a heavy reliance on both brown and black coal energy sources. Recently, the country has witnessed a trend toward increased use of natural gas sources but the latter has also been ridden with disputes and public opposition to the controversial extraction of coal seam gas. Currently, Australia is in the midst of parliamentary approval of its Clean Energy Future legislative package that includes consideration of a carbon tax.

JAPAN STATES THAT IT IS ESSENTIAL FOR ALL MAJOR EMITTING COUNTRIES TO COOPERATE AND MAKE AN EFFORT TO REDUCE GHG EMISSIONS

EMISSIONS IN AUSTRALIA FROM 1990 TO 2009 INCREASED TO 30.5% ABOVE 1990 LEVELS, OVERSHOOTING THE COMMITMENT BINDING TARGET BY 22.5%

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IT IS EXPECTED THAT AN AGREED PRICE ON CARBON WILL UNLEASH THE HUGE JOB-CREATING POTENTIAL AND INVESTMENTS IN RENEWABLE ENERGY AND CLEAN TECH INNOVATION THAT HAVE LONG AWAITED A FERTILE POLICY FRAMEWORK IN AUSTRALIA

A final verdict on carbon tax legislation is expected by November 2011 for possible implementation in July 2012 and with a Cap and Trade emissions trading scheme (ETS) to follow from July 2015. It is expected that an agreed price on carbon will unleash the huge job-creating potential and investments in renewable energy and clean-tech innovation that have long awaited a fertile policy framework in Australia.

The Clean Energy Bill 2011 was passed by the Lower House in the Senate on 12 October. The carbon tax will be effective as per 1 July 2012.

The Carbon Tax Legislation covers:

- ▶ Australia's 500 biggest polluters, with the revenue returned to households and to be invested in clean energy projects. Higher emissions mean less payments;
- ▶ From 1st July 2012, a price of 23\$AUD per tonne of carbon dioxide equivalent (CO₂e) will apply for a fixed period of 3 years, indexed annually at 2.5% with the transition to a cap and trade mechanism (ETS) from 2015. With an ETS in place, the minimum price of carbon will be set at 15\$AUD per tonne with a ceiling price of 20\$AUD above international carbon prices. Carbon permits will be traded through the market with a cap set by the Government in accordance with Australia's emission targets;
- ▶ The Carbon Tax will cover a subset of greenhouse gases presently covered by the National Greenhouse and Energy Reporting (NGER) legislation; comprising carbon dioxide, methane, nitrous oxide and perfluorocarbons emitted from aluminium smelting. Emissions from synthetic greenhouse gases, business transport emissions, non-transport use of liquid and gaseous fuels effectively will be 'taxed' through other legislation, e.g. such as through reductions in Fuel Tax Credits. However under NGER, these gases will still need to be reported, but are excluded for determining a carbon tax liability.

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Organisations who have facilities that emit more than 25 ktCO₂e, or as a whole corporation, emit more than 50 ktCO₂e are required to report their Scope 1 (direct) and Scope 2 (indirect) emissions to the National Greenhouse and Energy Reporting (NGER) scheme on an annual basis since the 1st of July 2011. Under the proposed Carbon Tax legislation, organisations with facilities emitting more than 25kt CO₂e as Scope 1 emissions will be liable to purchase permits from the Government, each representing 1 tonne CO₂e, to cover their emissions within the financial year running from July 1 to June 30. It is anticipated that the Carbon Tax liability will affect approximately 500 of Australia's largest emitters whilst the 25kt facility threshold is in place and until the transition to an ETS in 2015.

The Carbon Tax scheme is expected to cut 160 million tonnes of carbon dioxide from the atmosphere by 2020 and will provide compensation to households to help them deal with corresponding price increases. Treasury modelling indicates the carbon price alone would produce domestic abatement of 58 million tonnes by 2020. These domestic abatement opportunities will take Australia 83% of the way to achieving its 5% emissions reduction target by 2020.

Recommendations for reporting

Following Australia's commitment to the G20 in 2009 to phase out or eliminate 'inefficient' fossil fuel subsidies, the Australian Taxation Office did its own assessment and found there were up to 17 mechanisms in the Federal Tax system that could be considered fossil fuel subsidies. This included the diesel fuel rebate (5 billion \$AUD annually) and accelerated depreciation (880 million \$AUD annually). The total subsidy to the fossil fuel sector identified in these documents was over 8 billion \$AUD a year.

This figure would have been significantly higher if the costs associated with research & development and exploration had also been included. For example, a recent Parliamentary question revealed that the value of exploration and quarrying subsidies alone were likely to be worth around 8 billion \$AUD in 2010.

IT IS ANTICIPATED THAT THE CARBON TAX LIABILITY WILL AFFECT APPROXIMATELY 500 OF AUSTRALIA'S LARGEST EMITTERS WHILST THE 25KT FACILITY THRESHOLD IS IN PLACE AND UNTIL THE TRANSITION TO AN ETS IN 2015

THE TOTAL SUBSIDY TO THE FOSSIL FUEL SECTOR IDENTIFIED WAS OVER \$8 BILLION \$AUD A YEAR

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BETWEEN 1990-2009 NEW ZEALAND EXCEEDED ITS EMISSIONS TARGETS BY 19.4%

THE GOVERNMENT HAS CHOSEN THE EMISSIONS TRADING SCHEME (ETS) FIRST LEGISLATED IN SEPTEMBER 2008, AS THE MOST COST EFFECTIVE WAY OF PUTTING A PRICE ON EMISSIONS AND CREATING AN INCENTIVE MECHANISM

New Zealand

In 2009 GHG emissions in New Zealand were 70.5 MtCO₂e. The increase in GHG emissions in New Zealand from 1990 to 2009 was 19.4% indicating the country overshoot its emissions binding target by the same figure. This increase in emissions is mostly as a result of increased electricity production and rapid growth in the use of road transport.

In addition, the breakdown of the GHG emissions within the agricultural sector shows that enteric fermentation is responsible for almost 69% of all emissions.

Policies and Measures

Under the Kyoto Protocol, New Zealand agreed to reduce its greenhouse gas emissions back to 1990 levels by 2012 or pay for any excess. The Government has chosen the Emissions Trading Scheme (ETS) first legislated in September 2008, as the most cost effective way of putting a price on emissions and creating an incentive mechanism – especially for businesses and consumers – designed to change behaviour. The scheme comprises not only heavy industry but also waste, agriculture and fishing. The ETS makes aims to reduce emissions, invest in clean technology and renewable power generation and plant trees.

To reduce the effect of the ETS on the economy, the Government has introduced a transitional phase from 1 July 2010 to 31 December 2012. During the transitional phase the emissions obligation placed on liquid fuel, gas and electricity companies has been halved (i.e., they will only be required to surrender one emission unit for every two tonnes of emissions), and there will be a 25 \$NZD fixed-price option for emission units (New Zealand Units, NZUs).

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The money then goes to those with NZUs to sell, such as:

- ▶ Foresters, who earn NZUs because their forests remove greenhouse gases from the atmosphere. Foresters are the main source of NZUs;
- ▶ Fishing quota owners, who are allocated NZUs by the Government to compensate for any decrease in the value of quota;
- ▶ Trade-exposed companies with high energy costs, who are allocated NZUs by the Government.

National compulsory reporting of greenhouse gases emissions will start from 2012.

The New Zealand Government maintains that failing to act will reduce New Zealand's credibility and influence in international forums; harm overseas consumer views of its exports, and of New Zealand as a tourist destination.

THE NEW ZEALAND GOVERNMENT
MAINTAINS THAT FAILING TO ACT WILL
REDUCE NEW ZEALAND'S CREDIBILITY
AND INFLUENCE IN INTERNATIONAL
FORUMS; HARM OVERSEAS CONSUMER
VIEWS OF ITS EXPORTS AND OF NEW
ZEALAND AS A TOURIST DESTINATION

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International Outlook

The Kyoto Protocol will remain in force until 2012, but so far there is no legally binding emissions treaty to replace it. The Copenhagen (2009) and Cancun (2010) climate conferences both produced accords, but lacked binding commitments. Negotiation continues in the build up to Durban later this year, with UNFCCC Executive Secretary Christian Figueres urging countries to push ahead with their work to aim for another significant step in addressing global climate change in 2011 at Bangkok's summit (UNFCCC 2011). In the meantime, market-based schemes are beginning to occur at the national level in spite - or perhaps because of - a lack of concrete agreement at the international level.

A US cap-and-trade scheme has to date failed to be passed into law, but inter-state and intra-state schemes are becoming more prevalent in progressive states in the North-West and Mid-Atlantic. However, states such as Texas which are still heavily reliant on fossil fuels and energy-intensive industries are resisting local and national initiatives. China is also planning a national cap-and-trade scheme with the help of the Asian Development Bank.

This follows the relative success of two city-wide voluntary schemes but it also prompted by growing concerns around national energy security and the international competitiveness of China's biggest businesses through energy efficiency (Zhi and Bo 2010). Other regional actors are waiting to see the outcome before committing to similar plans. A move towards trading should greatly increase transparency in reporting and allow greater scrutiny of emissions data. However, emissions are likely to continue rising among the emerging economies of Brazil, China, India and Russia, although moves towards energy efficiency can lower overall intensity.

THERE IS CURRENTLY NO LEGALLY BINDING EMISSIONS TREATY TO REPLACE KYOTO WHEN IT EXPIRES IN 2012. IF THIS REMAINS THE CASE THEN WE NEED TO BE PREPARED TO LOOK BEYOND GOVERNMENT TO BRING ABOUT THE NECESSARY EMISSIONS REDUCTIONS

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Figure 20.

Sector: Oil & Gas

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	SANTOS	AU	3,705,704	1,628.31	-	3,751.47	Complete & Verified
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-

Sector: Basic Materials

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	RIO TINTO	GB	44,600,000	783.24	3	5,056.80	Complete & Verified
2	POSCO	KR	71,781,000	1,327.09	3	5,600.66	Complete & Verified
3	SUMITOMO METAL	JP	2,167,000	265.81	1	4,539.38	Complete & Verified

Sector: Industrials

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	TRANSURBAN GROUP	AU	46,065	77.23	5	3,142.50	Complete & Verified
2	TOSHIBA	JP	3,002,000	43.93	2	3,109.19	Complete & Verified
3	LG	KR	1,215,000	165.07	2	3,230.34	Complete & Verified

Sector: Consumer Goods

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	SONY	JP	1,617,295	20.37	3	1,078.25	Complete & Verified
2	LG ELECTRONICS	KR	1,215,000	24.43	2	1,082.31	Complete & Verified
3	SHARP	JP	1,275,000	43.60	2	1,101.48	Complete & Verified

Sector: Health Care

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	MITSUBISHI TANABE	JP	138,315	32.47	-	115.92	Complete & Verified
2	ASTELLAS PHARMA	JP	201,000	19.27	1	102.72	Complete & Unverified
3	TERUMO	JP	106,000	34.09	1	117.54	Complete & Unverified

Intensity is measured as tCO₂e/\$Million turnover

SECTORAL 32

ANALYSIS

Figure 20. (continued)

Sector: Consumer Services

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	WESFARMERS	AU	5,515,399	127.48	4	1,460.12	Complete & Verified
2	WOOLWORTHS	AU	2,944,668	67.79	3	1,400.43	Complete & Verified
3	-	-	-	-	-	-	-

Sector: Telecommunications

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	TELSTRA	AU	1,482,493	71.10	4	103.35	Complete & Verified
2	SK TELECOM	KR	529,080	42.37	-	74.62	Complete & Verified
3	SINGAPORE TELECOM	SG	160,096	13.28	1	45.53	Complete & Unverified

Sector: Utilities

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	AGL ENERGY	AU	7,800,000	1,638.20	1	2,637.45	Complete & Verified
2	OSAKA GAS	JP	6,045,000	443.63	1	1,442.88	Complete & Unverified
3	TOKYO GAS	JP	939,000	55.07	-	1,054.32	Complete & Unverified

Sector: Financials

Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	WESTPAC BANKING	AU	200,165	5.29	5	108.55	Complete & Verified
2	NATIONAL AUSBANK	AU	208,563	5.65	5	108.92	Complete & Verified
3	STOCKLAND	AU	146,274	82.88	3	186.15	Complete & Verified

Sector: Technology

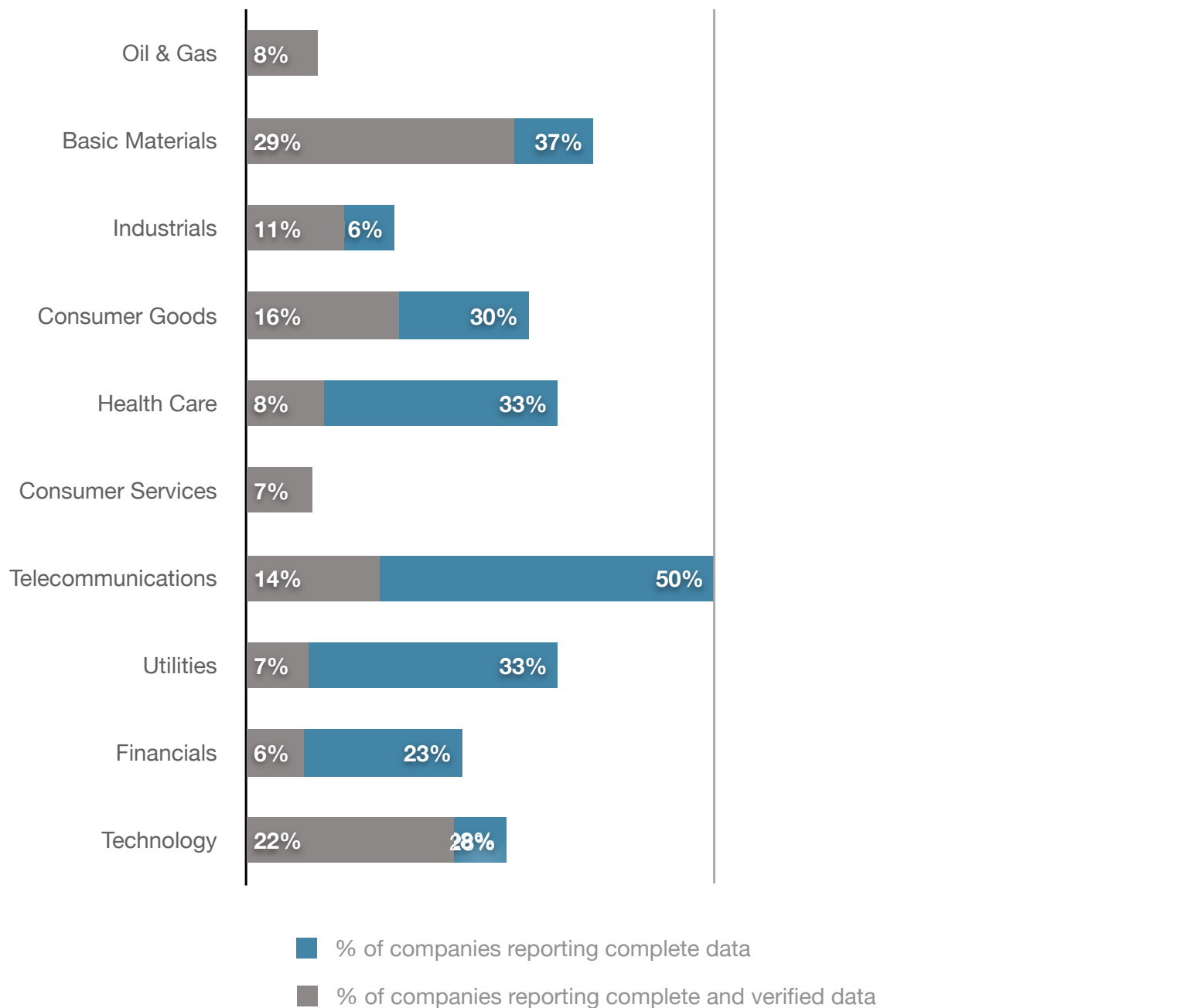
Sector Rank	Company Name	Cntry	Absolute Emissions tCO ₂ e (Scope 1+2)	Scope 1+2 Intensity	Scope 3 Categories Disclosed	Scope 1+2 + 50% Inferred S3 Intensity	Disclosure & Verification status
1	ASUSTEK COMPUTER	TW	6,274	13,190.00	1	552.59	Complete & Verified
2	ADVANCED SEMI. ENGR	TW	5,798	506,244.0	-	740.49	Complete & Verified
3	TAIWAN SEMICONMNFG	TW	59,738	4,173,897	-	841.91	Complete & Verified

Intensity is measured as tCO₂e/\$Million turnover

SECTORAL 33 ANALYSIS

Summary Sectors leading the field of disclosure

Figure 21.



The Rankings show that there is vast room for improving GHG emissions reporting and verification throughout Asia-Pacific and its dominant industry sectors. However it is interesting to note that in two sectors: Oil & Gas and Consumer Services, 100% of companies

reporting complete information have their data externally verified.

The Telecommunications, Health Care and Utilities sectors, which have the highest levels of disclosure are among those with the lowest levels of external verification in the region.

VERIFICATION 34

ANALYSIS

Verifier Analysis

The breakdown of the top 8 verifiers shown in figure 22 is taken from companies which have been categorised as having complete and externally verified emissions under the ET Carbon Ranking methodology.

With around 13% of the Asia-Pacific reports being verified, the verification level in the region is relatively low. However, the verification market is also more diverse than in Europe. Whilst the Big Four audit firms are responsible for just over a third of the verification carried out, this is much lower than the 75% carried out in Europe.

The most common standards employed in the region for verification were AA1000 and ISAE3000.

Figure 22.



DISCUSSION 35

KEY POINTS

WITHOUT COMPLETE AND VERIFIED DATA
WE CANNOT ACCURATELY PAINT A PICTURE
OF THE EMISSIONS LANDSCAPE

CONSIDERING BUSINESS' MOTIVATION TO
PROVIDE SHAREHOLDER RETURN, WE CAN
INCENTIVISE CHANGE THROUGH AFFECTING
A COMPANY'S SHARE PRICE

Non-Sectoral approach

The ET Carbon Ranking methodology is based on a non-sectoral approach as it is intended to create incentives for disclosure and emissions reduction across the board. Under this wider Environmental Tracking system, companies with higher intensities will experience greater downward pressure than those with low intensities, reflecting the science behind climate change mitigation dictating that absolute emissions have to be reduced.

Disclosure & Verification before intensity

It could be argued that the present Ranking does not accurately reflect the emissions landscape as the key determinant of positioning is disclosure and verification before intensity. However, without complete and verified data we cannot accurately paint a picture of the emissions landscape.

High intensity by definition

By definition some companies pollute more than others, moreover, many of these companies provide valuable and vital services to society. Yet without strong incentives to change, they will continue to carry out their activities in a way which is detrimental to the environment. Virtually all the technological advances needed to tackle climate change are already in existence, or are only a few years away with the necessary investment.

The only way we can expect these companies to invest in new technologies and employ new environmentally friendly policies is to provide them with an incentive to do so. The EIO argues that within the framework of the existing system this incentive must accord with a company's *raison d'être*: to maximise share price return. This can only be achieved by creating a system which influences share price according to the environmental costs of a company's actions.

REPORTING 36

LANDSCAPE

Sustainability reporting has grown rapidly over the past two decades as companies supplement their annual reports with issues pertaining to corporate social responsibility. However, the lack of a universally accepted or mandatory standard concerning corporate responsibility disclosure means both reporting formats and content vary widely. Although there are no legal requirements in the across the region to report on Corporate (Social) Responsibility (CR), a growing number of Asia-Pacific companies issue a yearly Corporate Responsibility report, thereby taking accountability for their environmental performance as well as their financial performance.

Although (some) CR data is being published by a large amount of companies, it is not always easy to find the information. The data is presented in CR reports, annual financial reports or on corporate websites, and only a limited number of companies actually highlight this information clearly on their websites. An additional problem is that whilst many companies are reporting data to some degree, it is frequently not presented in English.

In 2000 the Carbon Disclosure Project launched an initiative to encourage corporate GHG disclosure. However, this information is not always included in sustainability reports or placed in the public domain.

► **Scope 1 emissions:**

All direct emissions

► **Scope 2 emissions:**

Indirect emissions generated from the purchase of electricity

► **Scope 3 emissions:**

All other indirect emissions, such as distribution of goods, transportation of purchased goods, transportation of waste, disposal of waste, employee commuting, business travel

AS THE ET ASIA-PACIFIC 300 CARBON RANKING HIGHLIGHTS, THERE ARE MAJOR DISCREPANCIES BETWEEN COMPANIES IN REGARD TO THE QUALITY OF REPORTING

REPORTING 37

LANDSCAPE

THERE ARE CURRENTLY WIDE VARIATIONS IN INTERPRETATION OF METHODS FOR THE MAJORITY OF VOLUNTARY SCHEMES

ERM (2010) NOTES THAT THERE ARE FEW INITIATIVES PROVIDING INCENTIVES SUCH AS LEAGUE TABLES OR FINANCIAL PENALTIES/REWARDS - A GAP THE EIO SEEKS TO ADDRESS DIRECTLY THROUGH ITS ET CARBON RANKINGS AND INDEX SERIES

Variations

As pointed out by the ERM (2010) study on GHG reporting methods and initiatives, “Voluntary methods are open to varying degrees of interpretation by the user whilst mandatory methods tend to be much more prescriptive. An example of this can be seen on the issue of boundary setting. Voluntary methods such as the WBCSD/WRI GHG Protocol, and voluntary reporting schemes such as CDP, allow the user to select the boundary based on a number of options (e.g. operational or financial control; equity share), to ensure maximum flexibility. By way of contrast, mandatory schemes and their associated calculation methods, such as those for the UK Carbon Reduction Commitment and the schemes linked to trading of emissions allowances or permits (e.g. EU ETS; JVETS), define quite precisely the boundary, to ensure consistency in reporting between organisations covered by the scheme.”

Gaps

Interestingly, the report notes that “few methods or initiatives provide incentives such as benchmarks, league tables and financial penalties/rewards”. This is a gap the EIO seeks to address through its Environmental Tracking (ET) Carbon Rankings and Index Series.

The report also draws attention to the “lack of clear statement of a ‘mandatory minimum’ GHG reporting requirements in most of the voluntary methods and initiatives”, suggesting that “most voluntary methods have shied away from being prescriptive on key issues or have put complex arrangements in place to ensure adaptability” in order to encourage maximum uptake (ERM 2010).

Please see the Reporting guidance section (pages 42-43) for suggestions on the EIO’s recommendations for how companies can report their GHG emissions more clearly.

EXEMPLARY 38

REPORT

IBM

Direct, Indirect Greenhouse Gas GRI EN16

Total direct and indirect greenhouse gas emissions by weight.

Direct and Indirect Greenhouse Gas (GHG) Emissions (in metric tonnes CO2 equivalent)	2010	2009	2008	2007	Company has targets for year:	C1
CO2 Direct	276,721	235,656	296,768	301,993		
CO2 Indirect Scope 2	2,125,986	2,380,946	2,381,447	2,445,791		
CH4 Direct						
N2O Direct	17,441	11,235	5,386	6,685		
HFCs Direct	42,289	14,566	13,060	10,570		C6
PFCs Direct	232,290	181,907	256,667	251,617		
CF6 Direct	9,549	13,291	8,452	9,066		
Subtotal Direct (Scope 1)	546,245	456,655	580,343	579,931		
Scope 1 data coverage (e.g. owned and as % of revenues, employees, etc...): leased operations	100					
Scope 1 estimated total (for 100% data coverage)						
Scope 1 emissions intensity per 100K revenue						
Total direct GHG emissions factored against base figure (please specify base figure here, e.g., revenue, volume or production, floor space area, etc):						
Subtotal Indirect (Scope 2)	2,125,986	2,380,946	2,381,447	2,445,791		
Scope 2 data coverage (e.g. owned and as % of revenues, employees, etc...): leased operations	100					
Scope 2 estimated total (for 100% data coverage)						
Scope 2 emissions intensity per 100K revenue						
Total Direct and Indirect GHG Emissions	2,672,231	2,837,601	2,961,790	3,006,271		
Subtotal Scope 3 (from GRI EN17 "GHG Scope 3 Emission")						
Total GHG Emissions	2,672,231	2,837,601	2,961,790	3,006,271		

Taken from IBM's website, this template clearly shows Scope 1 & 2 emissions and is easily accessible from the company's online GRI index (see next page), under the EN16 link.

IBM also provides its Scope 3 emissions information which is clearly referenced under EN17.

IBM ranks 35 in the North America 300 and discloses 4 Scope 3 categories.

TEMPLATE

- ☐ 3.12 Table identifying the location of the Standard Disclosures in the report. Identify the page numbers or web links where the following can be found: * Strategy and Analysis 1.1 - 1.2; * Organizational Profile 2.1 - 2.10; * Report Parameters 3.1 - 3.13; * Governance, Commitments, and Engagement 4.1 - 4.17; * Disclosure of Management Approach, per category; * Core Performance Indicators; * Any GRI Additional Indicators that were included; and * Any GRI Sector Supplement Indicators included in the report.



- ☐ 3.13 Policy and current practice with regard to seeking external assurance for the report. If not included in the assurance report accompanying the sustainability report, explain the scope and basis of any external assurance provided. Also explain the relationship between the reporting organization and the assurance provider(s).

- ☐ 3.2 Date of most recent previous report (if any).

Using a GRI index helps anyone reading a report to navigate it quickly and easily.

It is strongly advised to clearly label where any verification statement can be found within the report.

- ☐ EN14 Strategies, current actions, and future plans for managing impacts on biodiversity. (Additional)
- ☐ EN15 Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. (Additional)
- ☐ EN16 Total direct and indirect greenhouse gas emissions by weight. (Core)
- ☐ EN17 Other relevant indirect greenhouse gas emissions by weight. (Core)
- ☐ EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved. (Additional)
- ☐ EN19 Emissions of ozone-depleting substances by weight. (Core)
- ☐ EN20 NO_x, SO_x, and other significant air emissions by type and weight. (Core)



Clear labeling of where GHG emissions totals, calculated as tCO₂e (metric tonnes of CO₂ equivalent) is extremely important for a member of the general public to be able to find the data easily.

REPORTING 40

EXAMPLES

SK Example

Natural gas consumption	EN3 →	Nm ³	4,226,197	3,309,405	2,765,720
Oil consumption	EN3 →	liter	596,361	573,808	563,014
Electricity consumption	EN4 →	MWh	937,170	1,087,506	1,088,052
Total greenhouse gas emissions ¹⁾²⁾	EN10 →	CO ₂ t	459,342	533,148	529,080
Scope 1 Stationary combustion		CO ₂ t	10,917	8,914	7,651
Mobile combustion		CO ₂ t	2,645	2,738	2,761
Subtotal		CO ₂ t	13,561	11,652	10,412
Scope 2 Electric power		CO ₂ t	434,167	510,149	510,410
Steam		CO ₂ t	11,613	11,347	8,258
Subtotal		CO ₂ t	445,780	521,496	518,668
Scope 3 Non-regulated GHGs (e.g., CFCs, halon, HCFCs)		CO ₂ t	21,238	21,787	21,787
Subtotal		CO ₂ t	21,238	21,787	21,787

1) Emission coefficient: "IPCC Assessment Report" and "Development of Emission Factors for Greenhouse Gas Inventories"
2) Greenhouse gas emissions: Tabulated through the SK Telecom GHG Inventory

Verification Statement: SK Telecom's Greenhouse Gas Inventory



We were engaged by SK Telecom Co., Ltd. to provide verification on the information presented in the 2009 SK Telecom GHG Inventory Report. SK Telecom is responsible for the preparation of the underlying GHG emissions and for the development and maintenance of the GHG inventory. Our responsibility is to express our conclusion on the GHG Inventory Report.

Scope

Our engagement covered SK Telecom's GHG inventory report based on 2009 activity data.

- Emission sources that owned and operated (used) by SK Telecom
- Direct GHG emissions (Stationary combustion, Mobile combustion) and indirect GHG emissions (Purchased electricity and steam)
- Carbon dioxide, methane and nitrous oxide emissions emitted between 1 January 2009 to 31 December 2009

Criteria & Protocols used for Verification

The SK Telecom's GHG Inventory Report was developed based on IPCC 'Guidelines for National Greenhouse Gas Inventories' (1996, 2006), WRI/WBCSD 'GHG Protocol' (2004), EU-ETS Monitoring and Reporting Guideline (2005), ISO14064-1 'Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals'.

We conducted our engagement in accordance with the ISO14064-3 'Specification with guidance for the validation and verification of greenhouse gas assertions'.

Work undertaken

Our work included following activities:

- An assessment of the significant methods, assumptions and process applied for GHG emission calculation
- An evaluation of the systems used to generate, aggregate and report GHG emission data at a site, business unit and corporate level
- Visiting selected sites to test the GHG data management systems and the associated reliability (Completeness, accuracy and consistency) of the reported GHG emissions data submitted to the corporate level

During our investigation, we discussed the necessary changes to the GHG inventory with SK Telecom and verified that these changes were adequately incorporated into the final version.

Conclusion

GHG emissions data for the year 2009 (t-CO₂e)

Year	Direct emissions (Scope 1)	Indirect emissions (Scope 2)	Total
2009	10,412	518,668	529,080

Based on the above, nothing has come to our attention that causes us to believe SK Telecom's GHG emissions data for the year 2009 reported in the GHG Inventory Report are not fairly stated.

Lee, Keun Mo
Managing Partner
Samjong KPMG Advisory Inc.
Seoul, June 2010

This example shows emissions data and sources clearly reported according to Scopes 1, 2, and 3.

Additionally, the verification statement clearly explains the work carried out and explicitly refers to the emissions data that was audited.

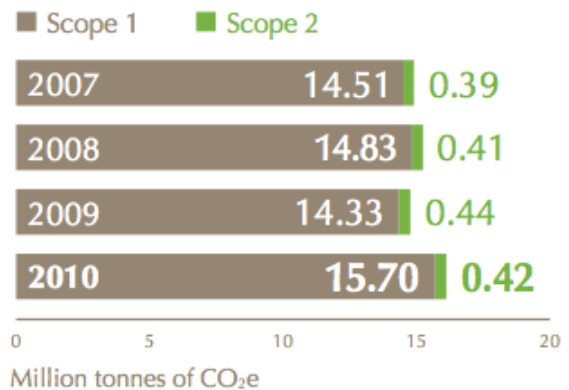
REPORTING 41

EXAMPLES

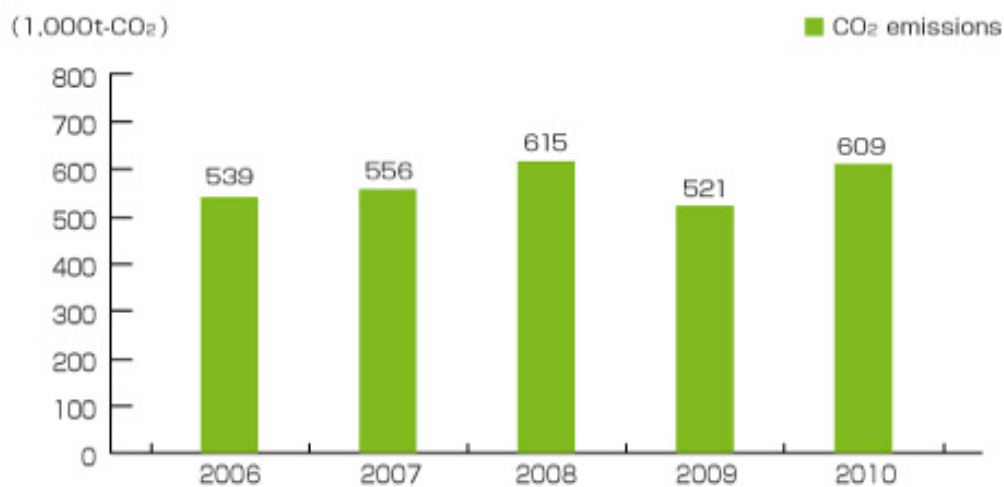
This example clearly reports its emissions according to Scope 1 and 2, using the GHG Protocol Corporate Standard, emissions as tonnes of CO₂e. It also provides previous years' data permitting year on year comparisons.

A further improvement would be to include Scope 3 emissions data.

Swire Pacific's GHG emissions



Yamaha Motor group trends in CO₂ emissions (108 companies subject to consolidated environmental management, 2010)



This example reports emissions data as a total figure only. It could be improved by simply splitting this total across the different emissions Scopes: 1, 2, and 3.

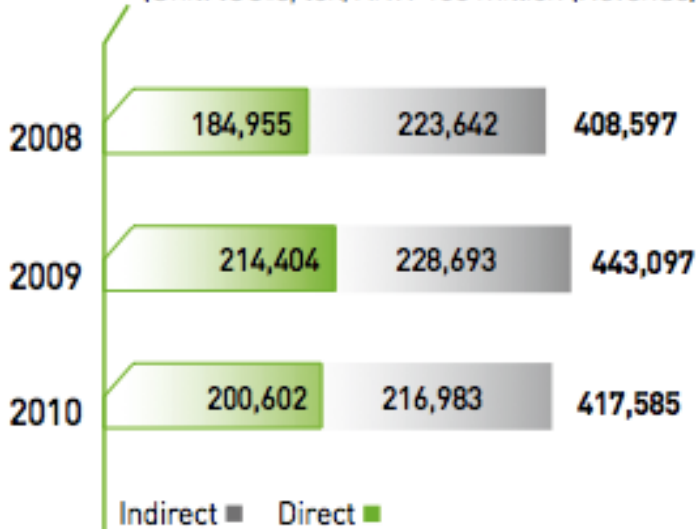
REPORTING 42

EXAMPLES

GHG Emissions

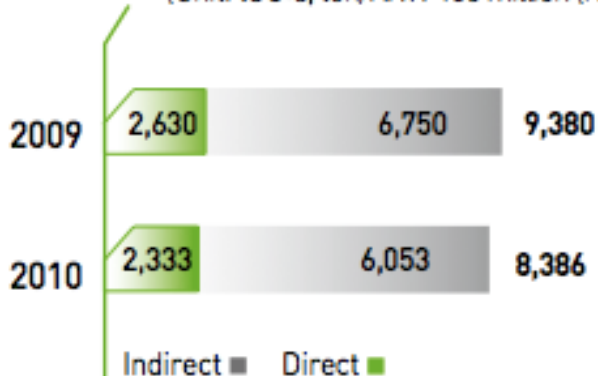
| Shipbuilding /Offshore |

(Unit: tCO₂e, ton/KRW 100 million [Revenue])



| Construction |

(Unit: tCO₂e, ton/KRW 100 million [Revenue])



This example shows a company failing to report its emissions data in absolute terms as specified by the GHG Protocol Corporate Standard, which required emissions data to be expressed as tonnes of CO₂e.

Like many reports, this example has chosen its own metric. Whilst this is better than no disclosure at all, non-standardised metrics can prevent direct emissions comparisons between companies, and can also prevent a meaningful quantitative understanding of the emissions data.

REPORTING 43

GUIDANCE

- ▶ **Report Scope 1, 2 & 3 emissions following GHG protocol guidelines**
- ▶ **Ensure emissions data is publicly available in CSR/Sustainability reports/Integrated Annual report and online**
- ▶ **Have emissions data verified by an independent third party to a recognised standard**
- ▶ **Ensure verification certificates are easily available to the publicly**

Companies can easily improve their standings within the ET Carbon Rankings by following several simple steps:

1. Publishing emissions data for Scopes 1, 2 and 3 in the public domain, in a clear and accessible manner, either on the company website or in a Sustainability Report, Annual report, Integrated Annual report or ideally, all of those that apply.
2. Ensuring this information has been externally verified to a reasonable standard of assurance, ideally against a specific GHG standard such as ISO 14064-3, but at least in accordance with a general assurance standard, such as ISAE 3000 (the International Standard on Assurance Engagement).
3. Calculate Scope 3 emissions comprehensively according to the new GHG protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The latest information on verification of Scope 3 can be found at the GHG Protocol and ISO websites.
4. Ensure that any verification statement is publicly available and included in the relevant Sustainability Report or Annual Report, as well as ensuring it can be easily found on your company's website.

One of the primary aims of the EIO's series of Rankings is to ensure that reliable GHG emissions data is publicly available and we applaud all companies making a serious effort to reach this standard.

Encouraging clearer reporting

The key areas which are identified by the various bodies of research carried out in the field of GHG emissions reporting, including by the EIO, suggest that there is an urgent need for:

- ▶ Standardised reporting
- ▶ More emphasis on the verification of GHG emissions data reported by companies

The following page outlines the EIO's suggestions for how companies could and should report their emissions going forward.

ET REPORTING 44

TEMPLATE



ENVIRONMENTAL TRACKING REPORTING TEMPLATE

Reporting Period:

1 January 2009 to 31 December 2010: Yes/No? _____

If other please specify _____

The reporting template below provides guidance on how companies can report their Greenhouse Gas emissions in a **simple, clear** and **cross comparable** format. It is intended to integrate with the existing and widely used GHG Protocol standard of reporting emissions in terms of Scope 1, 2 & 3. Crucially, it seeks to provide a framework by which companies can report their key GHG information in one place covering three core areas: **total GHG emissions**; **scope of reporting**; and, **verification**. The EIO is currently exploring how it might be able to link the reporting of such data directly to the ET Carbon Rankings.

	Metric tonnes of CO2e (tCO2e)	
	2010	2009
Scope 1	25,000	23,000
Scope 2	350,000	370,000
Scope 3	11,000,000	9,600,000
Total gross emissions	11,375,000	9,993,000
Green tariff Energy Purchased	(28,000)	-
Total net emissions	11,347,000	9,993,000

Boundary setting:

What reporting boundary method have you adopted under the terms of the GHG Protocol? _____

Scope of Reporting: Scope 1 & 2

Do the gross emissions reported for Scope 1 & 2 as defined by the GHG Protocol represent 100% of your company's emissions for these Scopes? Yes/No? _____

If you have answered no to the previous question, what percentage of your company's operations do they represent? _____

Scope of Reporting: Scope 3

How many of the 15 Scope 3 categories, as defined by the GHG Protocol, does your company disclose data for? Please attach a full breakdown with the percentage coverage for each _____

Verifications/Assurance (to be completed by an independent third party)

Name of Verifier: _____

Which standard has been used to assure the data? (E.g. ISO14064, AA1000AS etc) _____

Which Scopes have been verified? _____

If the company is reporting Scope 3 emissions, has it covered all of the Scopes accurately (for Scope 3 please refer to the GHG Protocol new Corporate Value Chain (Scope 3) Accounting and Reporting Standard), including any GHGs not covered by the GHG Protocol which may be material? Yes/No? _____

Are there any material issues with the numbers represented for the company under Scope 1, 2 or 3? Yes/No? _____

Is the data presented by the company representative of the company's entire scope of operations? Yes/No? If no approximately what % does it cover? _____

Please state any other further comments or qualifications _____

Please attach the verification full statement.

ET INDEX 45

SERIES

Moving forward: The ET Index Series

The ET Carbon Rankings represent the first phase of the Environmental Tracking concept, paving the way for the ET Index Series, which will follow soon after.

The ET Index Series has been designed to provide the investment community with a tool to encourage transparency and emission reductions on a global scale. Through the creation of a mainstream financial product, in the form of a series of broad market indexes, the world's largest companies can be incentivised to cut their emissions. This is done by re-weighting companies in the index series, either positively or negatively, on a sliding scale, according to their position in the ET Carbon Ranking.

As pointed out by the recent Mercer report on Climate Change Scenarios and the Implications for Asset Allocation (Mercer 2011), the use of sustainability themed indices in passive portfolios is identified as one way investors can take action to improve their portfolio resilience to climate-related risks.

However, the key question, which the EIO seeks to address through its Index series, is how to create an investable index which can have sufficient appeal to investors, evidently concerned with the bottom line. This is why the ET Index Series has been created to mirror the risk/reward profile of their non weight-adjusted counterparts, whilst still applying pressure to companies across the board to reduce their emissions.

The potential of ET Index Series to tackle GHG emissions rests on the logic that if a significantly large pool of investors track the indexes, it will alter the supply and demand for these companies' shares based on their position in our Ranking. This effectively increases the cost of emitting Greenhouse Gases, incentivising companies to take action.



NATIONAL INDEXES:

ET UK 100

REGIONAL INDEXES:

ET EUROPE 300

ET ASIA-PACIFIC 300

ET NORTH AMERICA 300

ET BRICS 300

GLOBAL INDEXES:

ET GLOBAL 800

ET GLOBAL 1200

THROUGH APPLYING PRESSURE TO A
COMPANY'S SHARE PRICE, THE ET
INDEX SERIES AIMS TO RAISE THE
COST OF CARBON FOR COMPANIES

GLOSSARY OF 46 TERMS

BAU: Business As Usual

CCC: Committee on Climate Change

CCX: Chicago Climate Exchange

CDM: Clean Development Mechanism

CED: Clean Energy Dialogue

CRC: Carbon Reduction Commitment

C(S)R: Corporate (Social) Responsibility

CO₂e: Greenhouse Gas emissions expressed as Carbon Dioxide (CO₂) Equivalents, meaning calculated to express their global warming potential in terms of CO₂.

DECC: Department of Energy and Climate Change

EIO: Environmental Investment Organisation

EPA: Environmental Protection Agency (US)

ET: Environmental Tracking

EU ETS: EU Emissions Trading Scheme

GDP: Gross Domestic Product

GHG: Greenhouse Gas

GRI: Global Reporting Initiative

GWP: Global Warming Potential

IMF: International Monetary Fund

ISAE: International Standard on Assurance Engagements

ISO: International Organization for Standardization

JVETS: Japanese Voluntary Emissions Trading Scheme

kWh: kilowatt hours

Mt: Mega tonnes

OECD: Organisation for Economic Co-operation and Development

RGGI: Regional Greenhouse Gas Initiative

Jl: Joint Implementation

tCO₂e: Metric Tonnes Carbon Dioxide Equivalent

ROC: Renewable Obligation Certificates

Scope 1 (or S1): All direct GHG emissions.

Scope 2 (or S2): Indirect GHG emissions from consumption of purchased electricity, heat or steam.

Scope 3 (or S3): Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

UNFCCC: United Nations Framework Convention on Climate Change

WBCSD/WRI: World Business Council for Sustainable Development / World Resources Institute

WCI: Western Climate Initiative

Climate Funds Update (2011) Hatoyama Initiative Available from: <http://www.climatefundsupdate.org/listing/hatoyama-Initiative#TOC-Basic-Description> [Accessed: 9th October 2011].

Reuters (2009) Japan's greenhouse gases hit record low in 2009/10, Available from: <http://www.reuters.com/article/2011/04/26/us-climate-japan-emissions-idUSTRE73P0TO20110426> [Accessed 14th October 2011].

Ministry of Environment of Japan MOEJ (2010) Japan's Fifth National Communication Under the United Nations Framework Convention on Climate Change. Available from: http://unfccc.int/resource/docs/natc/jpn_nc5.pdf [Accessed: 7th October 2011].

Ministry of Environment of Japan MOEJ (2011a) Japan's Voluntary Emissions

Trading Scheme (JVETS) Available from: <http://www.env.go.jp/en/earth/ets/jvets1105.pdf> [Accessed: 9th October 2011].

Ministry of Environment of Japan MOEJ (2011b) Offset Credit (J-VER) Scheme Available from: http://www.env.go.jp/en/earth/ets/mkt_mech/j-ver_scheme.pdf [Accessed: 9th October 2011].

Ministry of Foreign Affairs of Japan MOFAJ (2008) Financial Mechanism for "Cool Earth Partnership" Available from: <http://www.mofa.go.jp/policy/economy/wef/2008/mechanism.html> [Accessed: 9th October 2011].

United Nations Framework Convention on Climate Change UNFCCC (1998) Kyoto Protocol To The United Nations Framework Convention on Climate Change Available from:

<http://unfccc.int/resource/docs/convkp/kpeng.pdf> [Accessed: 7th October 2011].

United Nations Framework Convention on Climate Change UNFCCC (2011a) Summary of GHG Emissions for Australia Available from: http://unfccc.int/files/ghg_emissions_data/application/pdf/aus_ghg_profile.pdf [Accessed: 7th October 2011].

United Nations Framework Convention on Climate Change UNFCCC (2011b) Summary of GHG Emissions for Japan Available from:

http://unfccc.int/files/ghg_emissions_data/application/pdf/jpn_ghg_profile.pdf [Accessed: 7th October 2011].

United Nations Framework Convention on Climate Change UNFCCC (2011c) Summary of GHG Emissions for New Zealand Available from:

http://unfccc.int/files/ghg_emissions_data/application/pdf/nzl_ghg_profile.pdf [Accessed: 7th October 2011].

A. Denny Ellerman, Frank J. Convery, Christian de Perthuis, et al. (2010) Pricing Carbon: The European Union Emissions Trading Scheme. Cambridge University Press.

Cambridge Econometrics (2010) UK Energy and the Environment, Cambridge Econometrics: Cambridge.

CCC (2010) The CRC Energy Efficiency Scheme - advice to Government on the second phase, September 2010, Committee on Climate Change: London.

CCC (2010) Second Annual Progress Report, Committee on Climate Change: London.

DECC (2010) Assessment of the degree of carbon leakage in light of an international agreement on climate change, Department of Energy and Climate Change: London.

- DECC (2011) Statistical release: UK climate change sustainable development indicator: 2009 Greenhouse Gas emissions, final figures, 01 February 2011, available from http://www.decc.gov.uk/en/content/cms/news/stat_09_ghg/stat_09_ghg.aspx
- Ernst and Young (2010) Action Amid Uncertainty: The business response to climate change, Ernst and Young: London.
- ERM (2010) Company GHG Emissions Reporting - A Study on Methods and Initiatives: Brussels. Available from http://ec.europa.eu/environment/pubs/pdf/ERM_GHG_Reporting_final.pdf
- European Commission (2010) The EU Climate and Energy Package. available from http://ec.europa.eu/clima/policies/package/index_en.htm
- European Commission (2010) Report from the Commission to the European Parliament and the Council. Progress towards achieving the Kyoto objectives. European Commission, Brussels. Available from http://ec.europa.eu/clima/documentation/g-gas/docs/com_2010_569_en.pdf
- European Commission (2010) Effort Sharing Decision. Available from http://ec.europa.eu/clima/policies/effort/index_en.htm
- European Commission (2008). Emissions Trading System (EU ETS). http://ec.europa.eu/clima/faq/ets/index_en.htm
- GHG Protocol (<http://www.ghgprotocol.org/>); GHG Protocol (2010) Corporate Value Chain (Scope 3) Accounting and Reporting Standard Executive Summary. Available from <http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-scope-3-standard-executive-summary1.pdf>
- ISO (<http://www.iso.org>)
- IEMA (2010) Special Report: GHG Management and Reporting, Institute of Environmental Management and Reporting: Lincoln.
- Mercer (2011) Climate Change Scenarios - Implications for Strategic Asset Allocation. Available from http://www.mercer.com/attachment.dyn?idContent=1407480&filePath=/attachments/English/ClimateChangeSurvey_Report.pdf
- PwC (2009) Typico plc Greenhouse Gas Emissions Report, PricewaterhouseCoopers: London. <http://www.ukmediacentre.pwc.com/imagelibrary/downloadMedia.ashx?MediaDetailsID=1475>
- Sandbag (2010) Carbon Fat Cats 2009 - Company Analysis of the EU ETS, Sandbag: London http://www.sandbag.org.uk/site_media/pdfs/reports/fatcats2009.pdf
- UNFCCC (2011) Bangkok: Press release UN Climate Change Chief urges countries to push ahead with their work in 2011. Available from http://www.sandbag.org.uk/site_media/pdfs/reports/fatcats2009.pdf
- Zhi, Yang and Bo, Chen, It is Imperative to Build Regional Carbon Trading Markets in China, Academic Monthly, 2010, No.6.



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