

2010 Greenhouse Gas Emissions Inventory Report

Prepared for:

Overseas Private Investment Corporation

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INTRODUCTION

Background

Pace Global performed an independent analysis to quantify the greenhouse gas (GHG) emissions from Overseas Private Investment Corporation (OPIC) supported projects. GHGs are atmospheric compounds that trap the sun's infrared radiation or heat. In excess quantities, GHGs are linked to numerous impacts to the global climate and the environment as a whole. As a result, programs are being developed and implemented at regional and local levels to address and reduce GHG emissions from human generated sources. OPIC annually commissions an inventory of GHG emissions from projects they support that are or have the potential to be significant emitters.

This report presents the analysis undertaken to quantify GHG emissions from OPIC-supported projects that were active as of September 30, 2011 and emit over 25,000 short tons of carbon dioxide equivalent (CO₂) annually. This report, developed by Pace Global, presents emissions for the 2010 calendar year and is the fourth annual inventory of GHG emissions from OPIC-supported projects.

Baseline Development

The first inventory of GHG emissions from OPIC projects was conducted for the 2007 calendar year. To develop the initial baseline inventory, Pace Global conducted a screen of OPIC supported projects to develop an initial list from the complete project list for the 2007 calendar year. The scope of the analysis included direct emissions from on-site emissions sources associated with operations of OPIC-supported projects. Excluded were indirect emissions related to purchased electricity or steam, chemical releases, or the past construction of facilities. After further analysis of environmental data and project descriptions, Pace Global narrowed this initial list to a short list of projects that had the potential to emit greater than 100,000 short tons CO₂ per annum from direct fossil fuel combustion. The maximum Potential to Emit (maximum PTE) was then estimated for this short list of projects based on available project information, which varied by project, but included a combination of fuel consumption data, the amount of electricity generated (in kWh), generating capacity, relative project sizes, and an assumed operating capacity of 8,000 hours per year (unless otherwise noted). OPIC solicited verification from the individual project sponsor to support the accuracy of the estimates and assumptions and to ascertain 2007 operational emissions data.

The 2007 inventory consisted of project sponsor provided information where responses were received and Pace Global's estimates for the projects' maximum potential to emit (MPTE) for projects where sponsor feedback was not received at the time of reporting for the 2007 year inventory report (March 2009). Pace Global incorporated a 5% buffer to accommodate emissions that were not accounted for such as emissions from projects that emit less than 100,000 tons per year. The baseline 2007 OPIC inventory emission estimate for projects exceeding 100,000 short tons CO₂ per annum was **51,949,179** short tons CO₂.

The baseline emissions estimate was revised in the 2009 inventory to account for a reporting discrepancy from one of the projects, Various Egypt Subsidiaries (Apache). Apache mistakenly reported its emissions in relation to its equity share of the project (49 percent) for the baseline year. However, OPIC requires that 100 percent of emissions be accounted for, regardless of equity share. The discrepancy was rectified to ensure consistency with OPIC's GHG accounting methodology.

2008-2009 Inventory Development

For 2008, Pace Global conducted a screen of GHG emissions from OPIC supported projects. Pace Global incorporated a 5% buffer to accommodate any additional minimal emissions that were not accounted for in the inventory. Total GHG emissions for 2008 projects emitting over 100,000 short tons CO₂ were **35,097,142** short tons CO₂. The 2008 emissions estimate was revised in the 2009 inventory to account for a reporting discrepancy from one of the projects, Apache, as described in the section above. Both the baseline and 2008 estimates have been revised from those numbers reported in the 2007 and 2008 inventories reflecting the corrected estimates.

The 2009 inventory applied a similar screening methodology to that of 2008. However, for 2009, the GHG threshold was lowered from 100,000 short tons CO₂ to 25,000 short tons CO₂. As a result, OPIC began reporting emission estimates for projects that emit between 25,000 and 100,000 short tons CO₂. The 5% buffer that was applied in 2007 and 2008 was modified to take into consideration the projects that emit between 25,000 and 100,000 short tons CO₂, which accounted for 0.7% of total emissions in 2009. Therefore, Pace Global incorporated a 4.3% percent buffer to accommodate for any emissions that were not accounted for in the inventory. Total GHG emissions for projects in 2009 that emitted over 25,000 short tons of CO₂ were **33,952,754** short tons CO₂.

2010 Emissions Inventory

Pace Global replicated this process for the 2010 calendar year with a short list of projects that were active as of September 30, 2011, the closing date for Fiscal Year 2011. All projects that had already been determined to be below the 25,000 short ton threshold for inclusion in prior annual inventories were excluded in the initial screen for the 2010 list. Included in the list were projects that were both new to the list in 2010 and projects that became active in FY 2011. Pace Global then narrowed this list to those projects that exceeded the 25,000 short tons CO₂ per annum threshold. To support the accuracy of the estimates, OPIC solicited additional information and verification of project-specific assumptions from the projects' individual sponsors. Sponsors were given 30 days to reply to the solicitation with additional project details and 2010 operational emissions estimates. When sponsor feedback was unavailable, the 2009 estimate was used to reflect 2010 emissions. As was done for 2009, OPIC calculated emission estimates for projects emitting between 25,000 and 100,000 short tons CO₂. These projects accounted for 0.7% of total emissions in 2010. Therefore, Pace Global incorporated approximately a 4.3 percent buffer to accommodate for any minimal emissions that were not accounted for in the inventory. The estimated total for OPIC's 2010 GHG inventory is **34,543,566** short tons CO₂.

This report presents the GHG emissions results for OPIC projects in 2010. Next year, Pace Global will review and update the information pertaining to emissions attributable to OPIC-supported projects for the 2011 calendar year (2012 fiscal year), and identify and report differences from the emissions estimates presented in the initial inventory report.

METHODOLOGY

2010 Initial Screen

For 2010, Pace Global screened all of OPIC's affiliated active projects from the complete active project list provided by OPIC (See, Appendix B, for the complete list of projects analyzed). The scope of the analysis included emissions from the direct combustion of fossil fuels from projects that would result in over 25,000 short tons of CO₂ emitted per year. Emissions associated with electricity usage, industrial processes, and/or refrigerants were excluded. Based on the criteria below, Pace Global developed a short list of projects (See Table 1) that warranted a more detailed analysis to determine whether or not the given projects exceeded the threshold for inclusion. The initial screen relied on the following criteria.

- Projects that were active as of September 30, 2011;
- Projects that were determined, through the additional analysis performed in the 2007, 2008 and 2009 inventories, to emit or have the potential to emit over 25,000 short tons CO₂ per year; and
- New projects with which OPIC was affiliated as of FY 2011 in the energy, oil and gas, transportation, mining, manufacturing, and construction sectors. These sectors were chosen because facilities which are of sufficient size in these sectors have the potential to directly emit over 25,000 short tons CO₂ per year.

Projects in the finance/banking, insurance, and service sectors were omitted from further analysis because the majority of emissions from these sectors are attributable to electricity usage, which is outside the scope of this inventory.

After discussing and reviewing project details with OPIC for additional information regarding specific projects, Pace Global identified that there were 54 projects that could potentially reach or surpass the emissions threshold for inclusion in the inventory. Pace Global vetted and finalized emission calculations for these projects and included them into the 2010 inventory. Only one of the new projects on the short list for 2010 was determined to have the potential to emit over the threshold for inclusion (TB Air Drilling Associates).

Initial Short List

Table 1: Initial Short List – As of September 30, 2011

Project Name	Country	Sector
TB-AIR DRILLING ASSOCIATES	ALL OPIC COUNTRIES	Energy - Oil and Gas
MTKVARI HPP, LLC	GEORGIA	Energy - Power
Seaboard Corporation	Haiti	Manufacturing
HAITI 360	HAITI	Manufacturing
NORTHERN GULF RENTALS LIMITED	IRAQ	Construction
K&M Group of Companies, LLC	Jordan	Manufacturing
ECO-METROPOLITAN DEVELOPMENT CO. LTD.	KENYA	Construction
Seaboard Corporation	Madagascar	Manufacturing
GN BEVERAGES	MONGOLIA	Manufacturing
CAFR-BEL PAPYRUS LIMITED	NIGERIA	Manufacturing
TPL PROPERTIES (PVT) LIMITED	PAKISTAN	Construction
CG Solutions Global Holding Company	Ukraine	Energy - Power
Adapazari Elektrik Uretim	Turkey	Energy - Power
AES Jordan	Jordan	Energy - Power
AES Nigeria	Nigeria	Energy - Power
Doga Enerji	Turkey	Energy - Power
Gaza Private Generating PLC	Gaza	Energy - Power
Gebze Elektrik Uretim	Turkey	Energy - Power
Grenada Electricity Services (WRB)	Grenada	Energy - Power
Habibullah Coastal Power	Pakistan	Energy - Power
Isagen SA	Columbia	Energy - Power
Izmir Elektrik Uretim	Turkey	Energy - Power
Jorf Lasfar Energy	Morocco	Energy - Power
NEPC Consortium Power	Bangladesh	Energy - Power
Paiton Energy	Indonesia	Energy - Power
Pakistan Water & Power Authority	Pakistan	Manufacturing
Termovalle SCA	Columbia	Energy - Power
Trakya Elektrik Uretim	Turkey	Energy - Power
Accroven SRL	Venezuela	Energy – Oil and Gas
Baku-Tblisi-Ceyhan Pipeline	Azerbaijan	Energy – Oil and Gas
E.P. InterOil	Papua New Guinea	Energy – Oil and Gas
Equate Petrochemical	Kuwait	Manufacturing
Foxtrot International	Cote d'Ivoire	Energy – Oil and Gas
Natural Gas Liquids II Financing	Nigeria	Energy - Power
Various Egypt Subsidiaries (Apache)[2]	Egypt	Energy – Oil and Gas
West Africa Gas Pipeline	Ghana	Energy Oil and Gas
Wilpro Energy Services (El Furrial)	Venezuela	Energy – Oil and Gas
Wilpro Energy Services (Pigap)	Venezuela	Energy – Oil and Gas

Coeur D Alene Mines Corp	Bolivia	Mining
E.P. InterOil	Papua New Guinea	Energy – Oil and Gas
Israeli Electric	Israel	Energy – Oil and Gas
Jose Lindley	Peru	Manufacturing
Kalahari Gas Corporation	Botswana	Energy – Oil and Gas
Kidwell International	Vietnam	Energy – Oil and Gas
Lukoil Rpk Vysotsk	Russia	Energy – Oil and Gas
Maksan Manisa	Turkey	Manufacturing
National Power Corp	Philippines	Energy - Power
Palco	Poland	Manufacturing
Joshi Technologies / Parko Services	Colombia	Energy – Oil and Gas
The Powersource Group	Philippines	Energy - Power
Transnational Automotive	Cameroon	Transportation
Wbc-Sfc Entergre	Turkey	Manufacturing
Zeta Gas	Guatemala	Energy – Oil and Gas
Contour Global - Togo	Togo	Energy - Power

Source: OPIC and Pace Global.

Tier A (Power Generation) Facility Inventory Estimates

Tier A projects are fossil-fuel-fired, power-generation projects that were on the short list and that emitted more than 100,000 short tons CO₂. In 2010, thirteen projects were identified as Tier A projects. The maximum PTE for Tier A projects was based on an operating capacity of 8,000 hours per year (unless otherwise noted), fuel consumption data (where available), the facilities' power generating capacity (MW_e), and/or specific estimates of GHG emissions provided by the project sponsor (where available). While actual fuel consumption data yields the most accurate emissions estimates, this information was not available for nine Tier A projects. Therefore, when calculating emissions based on generation capacity alone, Pace Global derived estimates by calculating emissions based on capacity (MW_e), and used a conversion efficiency factor obtained from the *International Finance Corporation's Guidance Note 3*. Other standard assumptions required to perform inventory calculations were obtained primarily from *The Climate Registry's General Reporting Protocol*. A complete list of sources used to produce this analysis is included in the Annotated Bibliography in [Appendix D](#). The data used in the calculations as well as the maximum PTE calculations are detailed in [Appendix B](#). Details on conversion factors are presented in [APPENDIX C](#).

Tier B Facility Inventory Estimates

Tier B projects are defined as facilities in the oil and gas, mining, transportation, manufacturing, or construction sectors with annual GHG emissions estimated to be above 100,000 short tons CO₂. Two projects on the 2010 'short list' were identified as Tier B facilities. Oil and gas sector project emissions were based on throughput, fuel consumption data, and/or GHG emissions data from similar facilities. GHG emissions from manufacturing projects were based on the energy requirements from similar facilities and/or processed volumes. All maximum PTE estimates assume an operating capacity of 8,000 hours per year, unless otherwise noted. When emissions data from similar facilities was necessary to perform a calculation, the data was obtained from credible, published information sources. A complete list of data sources used to produce this analysis is included in the Annotated Bibliography in [Appendix D](#). The data used in the calculations as well as the estimated calculations are detailed in [Appendix B](#).

Tier C Facility Inventory Estimates

Tier C projects are those projects that emitted less than 100,000 short tons CO₂, but greater than 25,000 short tons CO₂. The initial screen excluded the following types of projects:

- Projects already known to exceed 100,000 short tons from the baseline inventory analysis;
- Projects in sectors not known to have emissions exceeding the threshold for inclusion, including: tourism, agriculture, finance, and services;
- Projects previously determined to be under the threshold for inclusion.

Pace Global performed inventory calculations for projects included in the shortlist based on project descriptions as well as published data and emissions factors. [Appendix A](#) presents projects and associated emissions that were included in the greater than 25,000 short tons CO₂ inventory.

Annual Review of Inventory Estimates

Pace Global will review OPIC's portfolio annually to determine if projects should be removed or added to the GHG inventory calculation. Pace Global will quantify the impacts of annual operational changes against the maximum PTE estimate and will utilize the above methodology to screen these additional projects in order to effectively to estimate GHG emissions going forward.

RESULTS

OPIC's 2010 GHG Inventory is 34,543,566 short tons CO₂equivalent, based on sponsor feedback and maximum PTE when sponsor comments were unavailable.

Table 2: 2010 OPIC GHG Emissions Inventory Estimates by Project

Tier A Projects									
Project Name	Location	Description	Capacity / Throughput	Fuel Type	Maximum PTE ^[1] (short tons CO2)	2007 Sponsor Reported Emissions Baseline (short tons CO2)	2008 Sponsor Reported Emissions Baseline (short tons CO2)	FINAL 2009 Emissions (short tons CO2)	FINAL 2010 Emissions (short tons CO2)
Adapazari Elektrik Uretim	Turkey	Combined Cycle	777 MW	Natural Gas	2,706,499	2,106,754	2,106,754	2,441,657	2,426,053
AES Jordan	Jordan	Combined Cycle	10,103,603 MMBtu/yr	Natural Gas	1,288,809	N/A	590,940	1,318,130 ^[2]	1,434,569
AES Nigeria	Nigeria	Engine-Based Power Generation	270 MW	Natural Gas	1,603,307	1,166,398	1,341,157	988,271	949,754
Doga Enerji	Turkey	Combined Cycle	180 MW	Natural Gas	816,057	740,762	740,762	672,014	655,981
Gaza Private Generating PLC	Gaza	Combined Cycle	136.4 MW	Natural Gas	487,657	293,804	303,535	325,926	228,627 ^[3]
Gebze Elektrik Uretim	Turkey	Combined Cycle	1554 MW	Natural Gas	5,412,998	4,121,923	4,121,923	4,794,979	4,833,330
Grenada Electricity Services (WRB)	Grenada	Engine-Based Power Generation	18 MW	Diesel (Fuel Oil)	104,604	114,571	121,156	141,127	135,237
Habibullah Coastal Power	Pakistan	Combined Cycle	140 MW	Natural Gas	487,658	447,880	447,880	Not Active	Not Active
Isagen SA	Columbia	Combined Cycle	300 MW	Natural Gas	696,654	203,010	Below Threshold	300,706	305,181
Izmir Elektrik Uretim	Turkey	Combined Cycle	1554 MW	Natural Gas	5,412,998	4,694,380	4,694,380	4,300,376	4,739,787

1 Note that the maximum PTE was calculated for projects that had detailed data as well as for those with sparse data. For those projects with minimal data available, the maximum PTE may be less than the 2007 emissions for which more information became available from the project sponsors

2 Net power generated increased (with an associated energy usage increase from 10,103,603 in 2008 to 22,536,748 MMBtu in 2009). This generation increase was responsible for the emissions increase.

Tier A Projects

Project Name	Location	Description	Capacity / Throughput	Fuel Type	Maximum PTE ^[1] (short tons CO ₂)	2007 Sponsor	2008 Sponsor	FINAL 2009 Emissions (short tons CO ₂)	FINAL 2010 Emissions (short tons CO ₂)
						Reported Emissions Baseline (short tons CO ₂)	Reported Emissions Baseline (short tons CO ₂)		
Jorf Lasfar Energy	Morocco	Steam Boiler	1356 MW	Coal	14,268,496	14,268,496	Not Active	Not Active	Not Active
NEPC Consortium Power	Bangladesh	Engine-Based Power Generation	313,105 MMBtu/yr	Natural Gas & HFO	383,159	245,795	343,581	255,734	297,068 ^[3]
Paiton Energy	Indonesia	Steam Boiler	1220 MW	Coal	7,938,380	9,553,044	9,553,044	9,624,125	9,854,076
Pakistan Water & Power Authority	Pakistan	Combined Cycle	150 MW	Natural Gas	522,490	522,490	522,490	283,937 ^[3]	283,937 ^[3]
Termovalle SCA	Columbia	Combined Cycle	205 MW	Natural Gas	714,070	Below Threshold	Below Threshold	223,983 ^[4]	223,983 ^[4]
Trakya Elektrik Uretim	Turkey	Combined Cycle	478 MW	Natural Gas	1,818,912	1,747,956	Not Active	Not Active	Not Active

³ 2009 emissions are significantly lower due to fewer reported operating hours.

⁴ 2009 emissions are significantly higher due to increased reported operating hours (however, the plant still operated at significantly lower capacity than its maximum capacity).

Tier B Projects

Project Name	Location	Description	Capacity / Throughput	Fuel Type	Maximum PTE ^[1] (short tons CO2)	2007 Sponsor	2008 Sponsor	FINAL 2009 Emissions (short tons CO2)	FINAL 2010 Emissions (short tons CO2)
						Reported Emissions Baseline (short tons CO2)	Reported Emissions Baseline (short tons CO2)		
Accroven SRL	Venezuela	NGL Facility	800 MMscfd	Natural Gas	998,677	998,677	445,832	Not Active	Not Active
Baku-Tblisi-Ceyhan Pipeline	Azerbaijan	Crude Oil Pipeline	1 million barrels crude oil	Natural Gas & Diesel	699,034	707,672	707,672	787,577	723,214
E.P. Interoil	Papua New Guinea	Crude Oil Refinery	32,500 barrels/day	Crude Oil	802,469	392,296	103,247	79,709 ^[5]	75,928 ^[5]
Equate Petrochemical	Kuwait	Petrochemical Facility	1540 MMBtu/hr	Natural Gas	720,573	720,573	680,311	Not Active	Not Active
Foxtrot International	Cote d'Ivoire	Gas Extraction & Pipeline	100 MMscfd	Natural Gas	270,804	104,484	104,484	104,484	Below Threshold ^[6]
Lukoil Rpk Vysotsk	Russia	Oil	14 million tons per annum	Oil & Natural Gas	107,184	70,767 ^[5]	70,767 ^[5]	76,339 ^[5]	97,117 ^[5]
Natural Gas Liquids II Financing	Nigeria	NGL Facility	19.5 MMscfd	Natural Gas	390,806	244,048	244,048	Not Active	Not Active
Various Egypt Subsidiaries (Apache)^[7]	Egypt	Oil/Gas Extraction & Processing	29,934,702 bbl/yr & 89,910 MMscf/yr	Oil & Natural Gas	2,429,543	3,071,933	3,244,190	3,294,654	3,465,842

⁵ Even though emissions are below the threshold, the project has the potential to emit greater than the threshold and has therefore, been included.

⁶ In 2010, Foxtrot operated for a minimal period of time and thus had corresponding GHG emissions below the established threshold of 25,000 tons.

⁷ In 2007 and 2008, Apache reported their emissions in relation to their equity share of the project (49%). Since OPIC accounts for 100% of a project's emissions regardless of the Sponsor's equity share, the project's emissions were correspondingly increased. As a result, emissions data will more than double in comparison to the project sponsor data in order to calibrate the inventory according to OPIC standards.

Tier B Projects									
Project Name	Location	Description	Capacity / Throughput	Fuel Type	Maximum PTE ^[1] (short tons CO2)	2007 Sponsor	2008 Sponsor	FINAL 2009 Emissions (short tons CO2)	FINAL 2010 Emissions (short tons CO2)
						Reported Emissions Baseline (short tons CO2)	Reported Emissions Baseline (short tons CO2)		Reported Emissions (short tons CO2)
West Africa Gas Pipeline	Ghana	Gas Compression & Transmission	190 MMscfd	Natural Gas	244,728	Not Active	Not Active	244,728	91,451 ^[5]
Wilpro Energy Services (El Furrial)	Venezuela	Gas Compression	60 MW	Natural Gas	289,106	289,106	289,106	Not Active	Not Active
Wilpro Energy Services (Pigap)	Venezuela	Gas Compression	100 MW	Natural Gas	507,923	571,090	571,090	Not Active	Not Active

Tier C Projects				
Project Name	Location	Description	FINAL 2009 Emissions (short tons CO2)	FINAL 2010 Emissions (short tons CO2)
Jose Lindley	Peru	Manufacturing	25,000	25,000
Joshi Technologies / Parko Services	Colombia	Oil	30,398	57,826

<u>Totals</u>				
	2007 Sponsor Reported Emissions Baseline (short tons CO2)	2008 Sponsor Reported Emissions Baseline (short tons CO2)	FINAL 2009 Emissions (short tons CO2)	FINAL 2010 Emissions (short tons CO2)
Tier A:	40,227,263	24,887,602	25,670,965	26,367,582
Tier B:	7,170,646	6,460,747	4,587,491	4,453,552
Tier C:	-	-	55,398	82,826
Subtotal:	47,397,909	31,348,349	30,313,854	30,903,960
Latin America Power III Funds:^[8]	2,077,500	2,077,500	2,077,500	2,077,500
5% Buffer for Additional Sources:	2,473,770	1,671,292	-	-
4% Buffer for Additional Sources:^[9]	-	-	1,561,400	1,562,106
TOTAL:	51,949,179	35,097,142	33,952,754	34,543,566

Source: Pace Global

⁸ Per agreement between Latin American Power III and OPIC, the Fund agreed to “not make an investment in a Portfolio Company if after such investment, the assets and operations of all Portfolio Companies then held by the Fund would emit (in the aggregate and on a calendar year basis) in excess of 2,077,500 short tons CO2 as calculated in accordance with the IPCC.”

⁹ [(Tier A + Tier B+ Latin America Power III Funds) * 5%] – Tier C

APPENDIX A – PROJECT EMISSIONS CALCULATIONS

This Appendix contains the inputs, sources of those inputs, and calculations used to estimate the emissions for each of the projects in OPIC's 2010 GHG Inventory. If sponsor feedback was submitted, the 2007, 2008, 2009 and 2010 operational emissions estimates were also included.

TIER A PROJECTS – BASED ON SPONSOR-PROVIDED CONSUMPTION

AES Jordan

Maximum Potential to Emit Estimate

AES Jordan's emissions estimate of **1,288,809 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	370 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 1,288,809 short tons CO₂ per year

$$370\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

AES Jordan was under construction and not operational during 2007. Since emissions from construction would be below the 100,000 short ton threshold this project has been omitted from the 2007 inventory.

2008 Operational Emission Estimate Based On Sponsor Feedback

AES Jordan's emissions estimate of **590,940 short tons CO₂** for 2008 was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Sponsor
Net Energy Generated	10,103,603 MMBtu	Project Sponsor
Emission Factor	53.06 kg CO ₂ /MMBtu	TCR, Table 12.1

Consumption-based emissions = 590,940 short tons CO₂ per year

$$10,103,603 \text{ MMBtu} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2009 Operational Emission Estimate Based On Sponsor Feedback

AES Jordan's emissions estimate of **1,318,130 short tons CO₂** for 2009 was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Sponsor
Net Energy Generated	22,536,748 MMBtu	Project Sponsor
Emission Factor	53.06 kg CO ₂ /MMBtu	TCR, Table 12.1

Consumption-based emissions = 1,318,130 short tons CO₂ per year

$$22,536,748 \text{ MMBtu} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

AES Jordan's emissions estimate of **1,434,569 short tons CO₂** for 2010 was calculated using the following information:

Data	Value	Source
Unit 1 Emissions	678,706,541 kgCO ₂	Project Sponsor
Unit 2 Emissions	622,726,311 kgCO ₂	Project Sponsor

Consumption-based emissions = 1,434,569 short tons CO₂ per year

$$(678,706,541 \text{ kgCO}_2 + 622,726,311 \text{ kgCO}_2) * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

Doga Enerji

Maximum Potential to Emit Estimate

Doga Enerji's emissions estimate of **816,057 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	180 MW	Project Description
Consumption	48,000 m ³ /hour	Project Description
Heat Content Natural Gas	1,029 Btu/scf	The Climate Registry, Table 12.1
Emission Factor	53.06kg CO ₂ /MMBtu	The Climate Registry, Table 12.1
Conversion Factor	251.98 cal/Btu	Perry's Chemical Engineering Hand Book, Table 1-7

Consumption-based maximum potential to emit = 816,057 short tons CO₂ per year

$$\frac{48000\text{m}^3}{\text{hr}} * \frac{8000\text{hr}}{\text{yr}} * \frac{\text{scf}}{0.02832\text{m}^3} * \frac{1029\text{Btu}}{\text{scf}} * \frac{\text{MMBtu}}{1000000\text{Btu}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Doga Enerji's 2007 operational-emissions of **740,762 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	180 MW	Project Description
Annual Fuel Consumption	347,644,124 Sm ³	Project Actual Data 2007
Heat Content Natural Gas	9180 kcal/Sm ³	Agreement with local Natural Gas supplier (BOTAS)
Emission Factor	53.06kg CO ₂ /MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 740,762 short tons CO₂ per year

$$\frac{347644124 \text{ Sm}^3}{\text{yr}} * \frac{9180 \text{ kcal}}{\text{Sm}^3} * \frac{1 \text{ Btu}}{251.98 \text{ cal}} * \frac{1000 \text{ cal}}{\text{kcal}} * \frac{\text{MMBtu}}{1000000\text{Btu}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors have not changed.

2009 Operational Emission Estimate Based On Sponsor Feedback

Doga Enerji's operational emissions of **672,014 short tons** were calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	180 MW	Project Description
Annual Fuel Consumption	300,402,594 Sm ³	Project Actual Data 2009
Heat Content Natural Gas	9,371 kcal/Sm ³	Agreement with local Natural Gas supplier (BOTAS)
Emission Factor	53.06kg CO ₂ /MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 672,014 short tons CO₂ per year

$$\frac{300,402,594 \text{ Sm}^3}{\text{yr}} * \frac{9,371 \text{ kcal}}{\text{Sm}^3} * \frac{1 \text{ Btu}}{251.98 \text{ cal}} * \frac{1000 \text{ cal}}{\text{kcal}} * \frac{\text{MMBtu}}{1000000\text{Btu}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Doga Enerji's operational emissions of **655,981 short tons** were calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	180 MW	Project Description
Annual Fuel Consumption	300,108,019 Sm ³	Project Actual Data 2010
Heat Content Natural Gas	9,417 kcal/Sm ³	Agreement with local Natural Gas supplier (BOTAS)
Emission Factor	53.06kg CO2/MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 655,981 short tons CO₂ per year

$$\frac{300,108,019 \text{ Sm}^3}{\text{yr}} * \frac{9,417 \text{ kcal}}{\text{Sm}^3} * \frac{1 \text{ Btu}}{251.98 \text{ cal}} * \frac{1000 \text{ cal}}{\text{kcal}} * \frac{\text{MMBtu}}{1000000 \text{ Btu}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

Grenada Electricity Services (WRB)

Maximum Potential to Emit Estimate

Grenada Electricity Services (WRB)'s emissions estimate of **104,604 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Diesel (Fuel Oil)	Project Description
Capacity	18 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	659 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 104,604 short tons CO₂ per year

$$18 \text{ MW} * \frac{1000 \text{ kW}}{\text{MW}} * \frac{8000 \text{ hr}}{\text{yr}} * \frac{659 \text{ gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Grenada Electricity Services (WRB)'s 2007 operational-emissions of **114,571 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Diesel (Fuel Oil)	Project Description
Fuel Consumption	10,821,042 gallons	Project Sponsor
Heat Rate	8013 Btu/kWh	Project Sponsor
Diesel LHV	70302 Btu/kg	Project Sponsor
Energy Generated	117,323,661 kWh	Project Sponsor
Emissions Factor	73.15 kg CO ₂ /MMBtu	The Climate Registry, Table 12-1
2007 Emissions	114,571 short tons	Project Sponsor

Consumption-based emissions = 114,571 short tons CO₂ per year

2008 Operational Emission Estimate Based On Sponsor Feedback

Grenada Electricity Services (WRB)s 2008 operational-emissions of **121,156 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Diesel (Fuel Oil)	Project Description
Fuel Consumption	11,436,588 gallons	Project Sponsor
Heat Rate	8006 Btu/kWh	Project Sponsor
Diesel LHV	40306 Btu/kg	Project Sponsor
Energy Generated	187,689,464 kWh	Project Sponsor
Emissions Factor	73.15 kg CO ₂ /MMBtu	The Climate Registry, Table 12-1
2008 Emissions	121,156 short tons	Project Sponsor

Consumption based emissions = 121,156 short tons CO₂ per year

2009 Operational Emission Estimate Based On Sponsor Feedback

Grenada Electricity Services (WRB)s 2009 operational-emissions of **141,127 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Diesel (Fuel Oil)	Project Description
Operating Hours	8,760	Project Description
Fuel Consumption	11,905,997 US gallons	Project Sponsor
Heat Rate	8,458 kJ/kWh or 8,016 BTU/kWh	Project Sponsor
Diesel LHV	42,400 kJ/kg or 40,188 BTU/kg	Project Sponsor
Energy Generated	194,279,333 kWh	Project Sponsor
Emissions Factor	659 grams CO ₂	The Climate Registry, Table 12-1

Consumption-based emissions = 141,127 short tons CO₂ per year

$$\frac{659 \text{ gCO}_2}{\text{Yr}} * 194,279,333 \text{ kWh} * \frac{0.0000011023 \text{ short tons}}{\text{kg}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Grenada Electricity Services (WRB)s 2010 operational-emissions of **135,237 short tons CO₂** was calculated using the following information:

Data	Value	Source
Emissions (Fuel input based)	135,237 short tons CO ₂	Project Sponsor

Consumption-based emissions = 135,237 short tons CO₂ per year

Paiton Energy

Maximum Potential to Emit Estimate

Paiton Energy's emissions estimate of **7,938,380 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Coal	Project Description
Capacity	1,200 MW	Project Description
Consumption	4,300,000 short tons/yr	Project Description
Coal Type	Sub-Bituminous	IEA, Coal in Indonesia in 2006
Heat Content Coal	17.25 MMBtu/short ton	The Climate Registry, Table 12.1
Emission Factor	97.09 kg CO ₂ /MMBtu	The Climate Registry, Table 12.1

Consumption-based maximum potential to emit = 7,938,380 short tons CO₂ per year

$$4,300,000 \frac{\text{short tons}}{\text{yr}} * 17.25 \frac{\text{MMBtu}}{\text{short ton}} * 97.09 \frac{\text{kgCO}_2}{\text{MMBtu}} * 0.0011023 \frac{\text{short tons}}{\text{kg}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Paiton Energy's 2007 operational-emissions of **9,553,044 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Coal	Project Description
Capacity	1,200 MW	Project Description
Consumption	4,694,238,000 kg	Project Sponsor
Coal Type	Sub-Bituminous	IEA, Coal in Indonesia in 2006
Heat Content Coal	17.25 MMBtu/short ton	The Climate Registry, Table 12.1
Emission Factor	97.09 kg CO ₂ /MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 9,553,044 short tons CO₂ per year

$$4,694,238,000 \text{ kg} * \frac{\text{short ton}}{907.18 \text{ kg}} * 17.25 \frac{\text{MMBtu}}{\text{short ton}} * 97.09 \frac{\text{kg CO}_2}{\text{MMBtu}} * \frac{\text{short ton}}{907.18 \text{ kg}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Sponsor provided 2010 data rather than data for 2008. As a result, the 2008 estimate defaults to 2007 data.

2009 Operational Emission Estimate Based On Sponsor Feedback

Paiton Energy's 2009 operational emissions estimate of **9,624,125 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Coal	Project Description
Capacity	1,220 MW	Project Description
Consumption	4,505,417,000 kg	Project Sponsor
Coal Type	Sub-Bituminous	IEA, Coal in Indonesia in 2006
Heat Content Coal	5,077 kcal/kg	The Climate Registry, Table 12.1
Moisture as Received	0.255	2009 yearly average
Ash as Received	0.023	2009 yearly average
C(ultimate analysis)	0.732	2009 yearly average
CO2 Molecular Weight	44	EPA
C Atomic Weight	12	EPA

Consumption-based emissions = 9,624,125 short tons CO₂ per year

$(4,505,417,000 \text{ kg} * 44/12 * 0.732 * (1-(0.255+0.023))) * 0.0011023 \text{ short ton}$
kg

2010 Operational Emission Estimate Based On Sponsor Feedback

Paiton Energy's 2010 operational emissions estimate of **9,854,076 short tons CO₂** was provided as follows:

Data	Value	Source
2010 Emissions	9,854,076 short tons	Project Sponsor

TIER A PROJECTS – BASED ON CAPACITY / HEAT CONTENT (CONSUMPTION DATA NOT AVAILABLE)

Adapazari Elektrik Uretim

Maximum Potential to Emit Estimate

Adapazari Elektrik Uretim's emissions estimate of **2,706,499 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	777 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 2,706,499 short tons CO₂ per year

$$777\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Adapazari Elektrik Uretim's 2007 operational-emissions of **2,106,754 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	777 MW	Project Description
2008 Emissions	1,911,247.2 metric tonnes	Project Sponsor

For the purpose of this baseline calculation, we are assuming the 2007 operating year was similar to the 2008 operating year, for which emissions data was provided; therefore, 2007 operational emissions = 2,106,754 short tons CO₂ per year

$$1,911,247.2 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Sponsor feedback provided last year for 2007 was also applicable to 2008. As a result, there is no change in emissions.

2009 Operational Emission Estimate Based On Sponsor Feedback

Adapazari Elektrik Uretim's 2009 operational-emissions of **2,441,657 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	777 MW	Project Description
2008 Emissions	2,215,071 metric tonnes	Project Sponsor

Capacity-based emissions = 2,441,657 short tons CO₂

$$2,215,071 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Adapazari Elektrik Uretim's 2010 operational-emissions of **2,426,053 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	777 MW	Project Description
2010 Emissions	2,200,915 metric tonnes	Project Sponsor

Capacity-based emissions = 2,426,053 short tons CO₂

$$2,200,915 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

AES Nigeria Barge

Maximum Potential to Emit Estimate

AES Nigeria Barge's emissions estimate of **1,603,307 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	270 MW	Project Description
Consumption	80 Mcf/day	Project Description
Heat Content Natural Gas	1,029 Btu/scf	The Climate Registry, Table 12.1
Emission Factor	53.06kg CO ₂ /MMBtu	The Climate Registry, Table 12.1

Consumption-based maximum potential to emit = 1,603,307 short tons CO₂ per year

$$\frac{80 \text{Mcf}}{\text{day}} * \frac{333 \text{days}}{\text{yr}} * \frac{1029 \text{Btu}}{\text{scf}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

AES Nigeria Barge's 2007 operational-emissions of **1,166,398 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	270 MW	Project Description
Consumption	58.165 Mcf/day	Project Sponsor
Emission Factor	53.06kg CO2/MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 1,166,398 short tons CO₂ per year

$$\frac{58.165 \text{Mcf}}{\text{day}} * \frac{333 \text{days}}{\text{yr}} * \frac{1029 \text{Btu}}{\text{scf}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

AES Nigeria Barge's 2008 operational-emissions of **1,341,157 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	270 MW	Project Description
Consumption	66.92 Mcf/day	Project Sponsor
Emission Factor	53.06kg CO2/MMBtu	The Climate Registry, Table 12.1

Consumption-based emissions = 1,341,157 short tons CO₂ per year

$$\frac{66.92 \text{ Mcf}}{\text{day}} * \frac{333 \text{days}}{\text{yr}} * \frac{1029 \text{Btu}}{\text{scf}} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2009 Operational Emission Estimate Based On Sponsor Feedback

AES Nigeria Barge's 2009 operational-emissions of **988,271 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	270 MW	Project Description
Total Heat Input	16,896,970 MMBtu	Project Sponsor
Emission Factor	53.06kg CO2/MMBtu	The Climate Registry, Table 12.1

Capacity-based emissions = 988,271 short tons CO₂ per year

$$16,896,970 \text{ MMBtu} * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

AES Nigeria Barge's 2009 operational-emissions of **949,754 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	270 MW	Project Description
Emissions	861,617 metric tonnes CO ₂	Project Sponsor

Capacity-based emissions = 949,754 short tons CO₂ per year

$$861,617 \text{ metric tonnes CO}_2 * \frac{1 \text{ short ton}}{0.9072 \text{ metric tonne}}$$

Gebze Elektrik Uretim

Maximum Potential to Emit Estimate

Gebze Elektrik Uretim's emissions estimate of **5,412,998 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 5,412,998 short tons CO₂ per year

$$1554 \text{ MW} * \frac{1000 \text{ kW}}{\text{MW}} * \frac{8000 \text{ hr}}{\text{yr}} * \frac{395 \text{ g CO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Gebze Elektrik Uretim's 2007 operational emissions of **4,121,923 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2008 Emissions	3,739,408.4 metric tonnes	Project Sponsor

For the purpose of this baseline calculation, we are assuming the 2007 operating year was similar to the 2008 operating year, for which emissions information was provided; therefore 2007 operational emissions = 4,121,923 short tons CO₂ per year.

$$3,739,408.4 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors for 2008 are the same as 2007.

2009 Operational Emission Estimate Based On Sponsor Feedback

Gebze Elektrik Uretim's 2009 operational emissions of **4,794,979 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2009 Emissions	4,350,005 metric tonnes	Project Sponsor

Capacity-based maximum potential to emit = 4,794,979 short tons CO₂ per year

$$4,350,005 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Gebze Elektrik Uretim's 2010 operational emissions of **4,833,330 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2010 Emissions	4,384,797 metric tonnes	Project Sponsor

Capacity-based maximum potential to emit = 4,833,330 short tons CO₂ per year

$$4,384,797 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

Pakistan Water & Power Development Authority

Maximum Potential to Emit Estimate

Pakistan Water & Power Development Authority's emissions estimate of **522,490 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	150 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 522,490 short tons CO₂ per year

$$150 \text{ MW} * \frac{1000 \text{ kW}}{\text{MW}} * \frac{8000 \text{ hr}}{\text{yr}} * \frac{395 \text{ g CO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, there are no changes to the maximum potential to emit estimate.

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors have not changed.

2009 Operational Emission Estimate Based On Sponsor Feedback

Pakistan Water & Power's 2009 operational emissions of **283,937 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	150 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)
Operating Hours	4,347 hours	Project Description

Capacity-based emissions = 283,937 short tons CO₂ per year.

$$257,588 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors were the same as 2009.

Termovalle SCA

Maximum Potential to Emit Estimate

Termovalle SCA's emissions estimate of **714,070 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	205 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 714,070 short tons CO₂ per year

$$205\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395 \text{ gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions were below the 100,000 short tons CO₂ threshold and thus were not included.

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions were below the 100,000 short tons CO₂ threshold and thus were not included.

2009 Operational Emission Estimate Based On Sponsor Feedback

Termovalle SCA's 2009 operating-emissions of **223,983 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas / Liquid Fuel	Project Description
Capacity	89,241,050 MWh (Liquid Fuel) 365,534,360 MWh (Natural Gas)	Project Description
2008 Operating Hours	517.74 hrs	Project Sponsor
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh using Natural Gas	International Finance Corporation, Guidance Note 3, Annex A section A-(i)
Emission Factor for Emissions Estimate from Capacity	695 g CO ₂ /kWh using Liquid Fuel	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

$$\begin{aligned}
 &89,241 \text{ MWh} * \frac{1000\text{kW}}{\text{MW}} * \frac{659\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}} \\
 &+ \\
 &365,534\text{MWh} * \frac{1000\text{kW}}{\text{MW}} * \frac{359\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}
 \end{aligned}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

No additional data was available. The 2010 emissions estimate will default to the 2009 emissions estimate.

Isagen SA

Maximum Potential to Emit Estimate

Isagen SA's emissions estimate of **696,654 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	200 MW + 100 MW from steam turbine	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 696,654 short tons CO₂ per year

$$200\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Isagen SA's 2007 operational-emissions of **203,010 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	300 MW	Project Description
2007 Emissions	184,171 metric tonnes	Project Sponsor

Capacity-based emissions = 203,010 short tons CO₂ per year

$$184,171 \text{ metric tonnes} * \frac{\text{short tons}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions were below the 100,000 short tons CO₂ threshold and, thus, were not included.

2009 Operational Emission Estimate Based On Sponsor Feedback

Isagen SA's 2009 operational-emissions of **300,706 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	300 MW	Project Description
2009 Emissions	272,800 metric tonnes	Project Sponsor

Capacity-based emissions = 300,706 short tons CO₂ per year

$$272,800 \text{ metric tonnes} * \frac{\text{short tons}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Isagen SA's 2010 operational-emissions of **305,181 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	300 MW	Project Description
2010 Emissions	276,860 metric tonnes	Project Sponsor

Capacity-based emissions = 305,181 short tons CO₂ per year

$$276,860 \text{ metric tonnes} * \frac{\text{short tons}}{0.9072 \text{ metric tonnes}}$$

Izmir Elektrik Uretim

Maximum Potential to Emit Estimate

Izmir Elektrik Uretim's emissions estimate of **5,412,998 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 5,412,998 short tons CO₂ per year

$$1554 \text{ MW} * \frac{1000 \text{ kWh}}{\text{MWh}} * \frac{8000 \text{ hr}}{\text{yr}} * \frac{395 \text{ g CO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Izmir Elektrik Uretim's 2007 operational-emissions of **4,694,380 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2008 Emissions	4,258,741.3 metric tonnes	Project Sponsor

For the purpose of this baseline calculation, we are assuming the 2007 operating year was similar to the 2008 operating year, for which emissions information was provided; therefore 2007 operational emissions = 4,694,380 short tons CO₂ per year.

$$4,258,741.3 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors were the same as 2007.

2009 Operational Emission Estimate Based On Sponsor Feedback

Izmir Elektrik Uretim's 2009 operational emissions of **4,300,376 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2009 Emissions	3,901,301 metric tonnes	Project Sponsor

Capacity-based emissions = 4,300,376 short tons CO₂ per year

$$3,901,301 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Izmir Elektrik Uretim's 2010 operational emissions of **4,739,787 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	1554 MW	Project Description
2010 Emissions	4,299,935 metric tonnes	Project Sponsor

Capacity-based emissions = 4,739,787 short tons CO₂ per year

$$4,299,935 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

Gaza Private Generating PLC

Maximum Potential to Emit Estimate

Gaza Private Generating PLC's emissions estimate of **487,657 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	140 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 487,657 short tons CO₂ per year

$$140\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395 \text{ gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Gaza Private Generating PLC's 2007 operational-emissions of **293,804 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	136.4 MW	Project Sponsor
2007 Emissions	266,539 metric tonnes	Project Sponsor

Capacity-based emissions = 293,804 short tons CO₂ per year

$$266,539 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Gaza Private Generating PLC's 2008 operational-emissions of **303,535 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	136.4 MW	Project Sponsor
2008 Emissions	275,367 metric tonnes	Project Sponsor

Capacity-based emissions = 303,535 short tons CO₂ per year

$$275,367 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2009 Operational Emission Estimate Based On Sponsor Feedback

Gaza Private Generating PLC's emissions estimate of **325,926 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	LFO No.2	Project Description
Capacity	80 MW (2009 Capacity)	Project Sponsor
2009 Emissions	295,680 metric tonnes	Project Sponsor

Capacity-based emissions = 325,926 short tons CO₂ per year

$$295,680 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

Gaza Private Generating PLC's emissions estimate of **228,627 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	LFO No.2	Project Description
Capacity	80 MW (2009 Capacity)	Project Sponsor
2010 Emissions	207,410 metric tonnes	Project Sponsor

Capacity-based emissions = 228,627 short tons CO₂ per year

$$207,410 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

NEPC Consortium Power

Maximum Potential to Emit Estimate

NEPC Consortium Power's emissions estimate of **383,159 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	110 MW	Project Description
Emission Factor for Emissions Estimate from Capacity	395 g CO ₂ /kWh	International Finance Corporation, Guidance Note 3, Annex A section A-(i)

Capacity-based maximum potential to emit = 383,159 short tons CO₂ per year

$$110\text{MW} * \frac{1000\text{kW}}{\text{MW}} * \frac{8000\text{hr}}{\text{yr}} * \frac{395\text{gCO}_2}{\text{kWh}} * \frac{0.0000011023 \text{ short tons}}{\text{g}}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

NEPC Consortium Power's 2007 operational emissions of **245,795 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Capacity	110 MW with average dispatch of 70.565 MW	Project Sponsor
2007 Emissions	222,985 metric tonnes	Project Sponsor

Capacity-based emissions = 245,795 short tons CO₂ per year

$$222,985 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

NEPC Consortium Power's 2008 operating emissions of **343,581 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas & HFO	Project Sponsor
Heat Content (HFO)	363,184 MMBtu / yr	Project Sponsor
Heat Content (NatGas)	5,335,005 MMBtu / yr	Project Sponsor

Capacity-based emissions = **343,581 short tons CO₂** per year

$$363,184 \text{ MMBtu} * \frac{78.80 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons} + 5,335,005 \text{ MMBtu} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons}$$

2009 Operational Emission Estimate Based On Sponsor Feedback

NEPC Consortium Power's 2009 operating-emissions of **255,734 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas & HFO	Project Sponsor
Heat Content (HFO)	313,105 MMBtu / yr	Project Sponsor
Heat Content (NatGas)	3,907,428 MMBtu / yr	Project Sponsor

Capacity-based emissions = **255,734 short tons CO₂** per year

$$313,105 \text{ MMBtu} * \frac{78.80 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons} + 3,907,428 \text{ MMBtu} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

NEPC Consortium Power's 2010 operating-emissions of **297,068 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas & HFO	Project Sponsor
Heat Content (HFO)	2,344,716 MMBtu / yr	Project Sponsor
Heat Content (NatGas)	1,596,952 MMBtu / yr	Project Sponsor

Capacity-based emissions = **297,068 short tons CO₂** per year

$$2,344,716 \text{ MMBtu} * \frac{78.80 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons} + 1,596,952 \text{ MMBtu} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * 0.0011023 \text{ short tons}$$

TIER B PROJECTS

Baku-Tblisi-Ceyhan Pipeline

Maximum Potential to Emit Estimate

The Baku-Tblisi-Ceyhan Pipeline's emissions estimate of **699,034 short tons CO₂** was calculated for emissions related to the combustion of natural gas and diesel in the transportation of crude oil through the pipeline. We assume that the 180-Btu-per-short-ton-of-crude-oil-transport-per-mile energy-requirement is evenly split between natural gas and diesel. Baku's emission estimate is based on the following information:

Data	Value	Source
Fuel Type used for Transport	Natural Gas and Diesel (dual fuel)	Project Description
Pipeline Throughput	1 million barrels crude oil	Project Description
Pipeline Length	1,760 km	Project Description
Conversion Factors	1.6093 km/mile 7.3 lbs/gal (density of crude)	EPA AP 42, p.A-7
Energy Required for Pipeline Transport (Crude)	180 Btu/short ton crude oil per mile (for ~40in. diameter pipeline)	Trans Alaska Pipeline EIS, p. 4.9-2
Emissions Factors	53.06 kg CO ₂ /MMBtu (natural gas) 73.15 kg CO ₂ /MMBtu (diesel)	The Climate Registry, Table 12.1

Maximum potential to emit = 699,034 short tons CO₂ per year

$$\frac{1000000 \text{ barrels}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{7.3 \text{ lbs}}{\text{gal}} * \frac{42 \text{ gal}}{\text{barrel}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 51,048,900 \text{ short tons crude/yr}$$

$$\frac{51048900 \text{ short tons crude}}{\text{yr}} * 1760 \text{ km} * \frac{\text{mile}}{1.6093 \text{ km}} * \frac{180 \text{ Btu}}{\text{short ton-mile}} * \frac{\text{MMBtu}}{1000000 \text{ Btu}} = 10,049,271 \text{ MMBtu/yr}$$

$$\frac{10049271 \text{ MMBtu}}{\text{yr}} * \frac{73.15 \text{ kg CO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}} * 0.5 = 405,153 \text{ short tons CO}_2/\text{yr from diesel}$$

$$\frac{10049271 \text{ MMBtu}}{\text{yr}} * \frac{53.06 \text{ kg CO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ short tons}}{\text{kg}} * 0.5 = 293,881 \text{ short tons CO}_2/\text{yr from nat. gas}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

The Baku-Tblisi-Ceyhan Pipeline's 2007 operational-emissions of **707,672 short tons CO₂** was calculated using the following information:

Data	Value	Source
2008 Emissions	642,000 metric tonnes	Project Sponsor

For the purpose of this baseline calculation, we are assuming the 2007 operating year was similar to the 2008 operating year, for which emissions information was provided; therefore 2007 operational emissions = 707,672 short tons CO₂ per year

$$642,000 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors did not change from 2007 to 2008.

2009 Operational Emission Estimate Based On Sponsor Feedback

The Baku-Tblisi-Ceyhan Pipeline's 2009 operational emissions of **787,577 short tons CO₂** was calculated using the following information:

Data	Value	Source
2009 Emissions	714,490 metric tonnes	Project Sponsor

For the purpose of this calculation, we are assuming the 2009 operating year was similar to the 2007-2008 operating year, for which emissions information was provided. 2009 operational emissions = 787,577 short tons CO₂ per year.

$$714,490 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

The Baku-Tblisi-Ceyhan Pipeline's 2009 operational emissions of **723,214 short tons CO₂** was calculated using the following information:

Data	Value	Source
2010 Emissions	656,100 metric tonnes	Project Sponsor

For the purpose of this calculation, we are assuming the 2010 operating year was similar to the 2008-2009 operating year, for which emissions information was provided. 2010 operational emissions = 723,214 short tons CO₂ per year.

$$656,100 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

E.P. Interoil

Maximum Potential to Emit Estimate

E.P. Interoil's emissions estimate of **802,469 short tons CO₂** was calculated by utilizing an example from API for a refinery with a throughput of 250,000 barrels crude oil per day for annual emissions of 5,600,000 metric tonnes CO₂. E.P. Interoil is approximately 13% the size of the example. Below is the information used in the estimate.

Data	Value	Source
Fuel Type	Crude Oil	Project Description
Throughput Volumes	32,500 barrels crude oil per day	Project Description
"Emissions Factors"	5,600,000 metric tonnes CO ₂ per year for a facility with throughput of 250,000 barrels crude oil per day	API Compendium, Table 7-25
Multiplication Factor	0.13	Factor applied to account for approximate size discrepancy between E.P. Interoil and example

Maximum potential to emit = 802,469 short tons CO₂ per year

$$\frac{5,600,000 \text{ metric tonnes CO}_2}{\text{yr}} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * 0.13$$

2007 Operational Estimate Based On Sponsor Feedback

E.P. Interoil's 2007 operational emissions of **392,296 short tons CO₂** was calculated using the following information.

Data	Value	Source
2007 Average Throughput	15,888 BPCD	Project Sponsor
2007 Emissions	355,891 metric tonnes	Project Sponsor

2007 Operational Emissions = 392,296 short tons CO₂ per year

$$355,891 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2008 Operational Estimate Based On Sponsor Feedback

E.P. Interoil's 2008 operational emissions of **103,247 short tons CO₂** was calculated using the following information.

Data	Value	Source
2008 Annual MMBtu	15,888 MMBtu	Project Sponsor
2008 Emissions	103,247 short tonnes	Project Sponsor

2008 Operational Emissions = 103,247 short tons CO₂ per year

2009 Operational Emission Estimate Based On Sponsor Feedback

E.P. Interoil's 2009 operational emissions of **79,709 short tons CO₂** was calculated using the following information:

Data	Value	Source
2009 Emissions	72,312 metric tonnes	Project Sponsor

2009 Operational Emissions = 79,709 short tons CO₂ per year

$$72,312 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}}$$

2010 Operational Emission Estimate Based On Sponsor Feedback

E.P. Interoil's 2010 operational emissions of **75,928 short tons CO₂** was calculated using the following information:

Data	Value	Source
2010 Emissions	8610 kg/hr	Project Sponsor

2010 Operational Emissions = 75,928 short tons CO₂ per year

$$\frac{8610 \text{ kg}}{\text{hr}} * \frac{8,000 \text{ hours}}{\text{yr}} * \frac{\text{MT}}{1,000 \text{ kg}} * \frac{\text{short tons}}{0.973 \text{ metric tones}}$$

Foxtrot International

Maximum Potential to Emit Estimate

Foxtrot International's emissions estimate of **270,804 short tons CO₂** was calculated accounting for both combustion emissions from the compression and transmission of natural gas as well as fugitive emissions using the following information. Additionally, an estimate of platform emissions was provided in the project description and incorporated into the emissions total.

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Pipeline Throughput	100 MMscfd	Project Description
Platform Emissions	142,000 short tons CO ₂ e	Project Description
Emissions Factors	3439 lbs CO ₂ per MMscfd from combustion 4297 lbs CO ₂ per MMscfd from fugitive	U.S. EIA and EPA GHG Inventory, Tables 3-34 & 3-36

Maximum potential to emit = 270,804 short tons CO₂ per year

$$\frac{100 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{3439 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 57,259 \text{ short tons CO}_2/\text{yr (combustion)}$$

$$\frac{100 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{4297 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 71,545 \text{ short tons CO}_2/\text{yr (fugitive)}$$

142,000 short tons CO₂ = 142,000 short tons CO₂/yr (platform – given data)

2007 Operational Emission Estimate Based On Sponsor Feedback

Foxtrot International's 2007 operational-emissions of **104,484 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
2008 Consumption	1530 MMscf/yr from flaring, power generation, and re-boiler offshore; 206 MMscf/yr from onshore heaters	Project Sponsor
Emissions Factor	0.0546 kg CO ₂ /scf	The Climate Registry, Table 12.1

For the purpose of this baseline calculation, we are assuming the 2007 operating year was similar to the 2008 operating year, for which emissions information was provided; therefore, 2007 operational emissions = 104,484 short tons CO₂ per year

$$\frac{1736 \text{ MMscf}}{\text{yr}} * \frac{1000000 \text{ scf}}{\text{MMscf}} * \frac{0.0546 \text{ kg CO}_2}{\text{scf}} * \frac{\text{short ton}}{907.18 \text{ kg}}$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors did not change from 2007 to 2008.

2009 Operational Emission Estimate Based On Sponsor Feedback

Per Sponsor feedback, emissions and operational factors did not change from 2007 to 2009.

2010 Operational Emission Estimate Based On Sponsor Feedback

Foxtrot International's 2010 operational-emissions of **17,514 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
2010 Offshore Emissions	85 MMscf/yr from flaring, power generation, and re-boiler offshore; 206 MMscf/yr from onshore heaters (excluding transport emissions)	Project Sponsor
2010 Onshore Emissions	178 MMscf/yr	
Emissions Factor	0.0546 kg CO ₂ /scf	The Climate Registry, Table 12.1

$$\frac{85 \text{ MMscf}}{\text{yr}} * \frac{1,000,000 \text{ scf}}{\text{MMscf}} * \frac{0.0546 \text{ kg CO}_2}{\text{scf}} * \frac{\text{short ton}}{907.18 \text{ kg}} = 5,116 \text{ short tons CO}_2$$

$$\frac{206 \text{ MMscf}}{\text{yr}} * \frac{1,000,000 \text{ scf}}{\text{MMscf}} * \frac{0.0546 \text{ kg CO}_2}{\text{scf}} * \frac{\text{short ton}}{907.18 \text{ kg}} = 12,398 \text{ short tons CO}_2$$

Lukoil RPK-Vysotsk

Maximum Potential to Emit Estimate

Lukoil RPK-Vysotsk's emissions were calculated using throughput from various years along with standard emission conversion factors.

Data	Value	Source
2009 Throughput	13,893,533 Tons	Project Description
2007 Throughput	9,173,100 Tons	Project Description
2007 Emissions	70,767 short tons	Project Description

$\frac{13,893,533 \text{ tons}}{9,173,100 \text{ tons}} * 70,767 \text{ short tons CO}_2$

Total-emissions estimate = 107,184 short tons CO₂ per year

2007 GHG Emissions Estimate

2006 data was the most recent data available. 2007 project emissions were calculated using throughput volumes. OPIC estimated the project's emissions to be **70,767 short tons CO₂** for 2007. Lukoil's emissions estimate was calculated using the following information:

Data	Value	Source
Fuel Type	Petroleum Products	Project Description
2006 Emissions	64,200 metric tonnes	Project Description

Total emissions estimate = 76,339 short tons CO₂ per year

$\frac{64,200 \text{ metric tonnes}}{0.9072}$

2008 GHG Emissions Estimate

Per Sponsor feedback, emissions and operational factors have not changed.

2009 GHG Emissions Estimate

2006 data was the most recent data available. 2009 project emissions were calculated using throughput volumes. OPIC estimated the project's emissions to be **76,339 short tons CO₂** for 2009. Lukoil's emissions estimate was calculated using the following information:

Data	Value	Source
Fuel Type	Petroleum Products	Project Description
Throughput Volumes	(2006) 9,173,100 tons (2009) 13,893,533 tons	Project Description
2006 Emissions	50,402 short tons	Project Description

Total emissions estimate = 76,339 short tons CO₂ per year

$$\frac{(13,893,533 * 50,402)}{9,173,100}$$

2010 GHG Emissions Estimate

Lukoil's 2010 operational emissions of **97,117 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Petroleum Products	Project Description
Fuel Consumption	25,736 tonnes petroleum	Project Description

Total emissions estimate = 97,117 short tons CO₂ per year

$$\frac{(25,736 \text{ tonnes petroleum} * 6.91 \text{ bbl} * 6.287 \text{ MMBtu} * 78.8 \text{ kg CO}_2)}{907.18 \text{ kg/short ton}}$$

Various Egypt Subsidiaries (Apache)

Maximum Potential to Emit Estimate

Various Egypt Subsidiaries (Apache)'s emissions estimate of 2,429,543 **short tons CO₂** was calculated by using an example from API for a similar oil and gas extraction and processing facility. The API example produced 6100 barrels oil per day and 30 MMscf natural gas per day for annual emissions of 108,000 metric tonnes CO₂; approximately one-tenth the size of Apaches. Apache's emissions estimate was calculated using the following information:

Data	Value	Source
Fuel Type	Oil and Natural Gas	Project Description
Production Volumes	29,934,702 barrels oil per year 89,910 MMscf natural gas per year	Project Description
"Emissions Factors"	108,000 metric tonnes CO ₂ per year for a facility that produces 6100 barrels oil per day and 30 MMscf natural gas per day	API Compendium, Table 7-4
Multiplication Factor	10	Factor applied to account for approximate size discrepancy between Apache and example
Operating Capacity Adjustment	49%	Project Sponsor

Maximum potential to emit = 2,429,543 short tons CO₂ per year

$$\frac{108,000 \text{ metric tonnes CO}_2}{\text{yr}} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * 10 * (1/.49)$$

2007 Operational Emission Estimate Based On Sponsor Feedback

Various Egypt Subsidiaries (Apache)'s 2007 operational emissions of **3,071,933 short tons CO₂** was calculated using the following information:

Data	Value	Source
2007 Emissions	1,365,560 metric tonnes	Project Sponsor
Operating Capacity Adjustment	49%	Project Sponsor

2007 Operational Emissions = 3,071,933 short tons CO₂ per year

$$1,365,560 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * (1/.49)$$

2008 Operational Emission Estimate Based On Sponsor Feedback

Various Egypt Subsidiaries (Apache)'s 2008 operational emissions of **3,244,190 short tons CO₂** was calculated using the following information:

Data	Value	Source
2008 Emissions	1,365,560 metric tonnes	Project Sponsor
Operating Capacity Adjustment	49%	Project Sponsor

2008 Operational Emissions = 3,244,190 short tons CO₂ per year

$$1,365,560 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * (1/.49)$$

2009 GHG Emissions Estimate

Various Egypt Subsidiaries (Apache)'s 2008 operational emissions of **3,294,654 short tons CO₂** was calculated using the following information:

Data	Value	Source
2009 Emissions	1,464,566 metric tonnes	Project Sponsor
Operating Capacity Adjustment	49%	Project Sponsor

2009 Operational Emissions = 3,294,654 short tons CO₂ per year

$$1,464,566 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * (1/.49)$$

2010 GHG Emissions Estimate

Various Egypt Subsidiaries (Apache)'s 2010 operational emissions of **3,465,842 short tons CO₂** was calculated using the following information:

Data	Value	Source
2010 Emissions	1,540,664 metric tonnes	Project Sponsor
Operating Capacity	49%	Project Sponsor

2010 Operational Emissions = **3,465,842** short tons CO₂ per year

$$1,540,664 \text{ metric tonnes} * \frac{\text{short ton}}{0.9072 \text{ metric tonnes}} * (1/.49)$$

West African Gas Pipeline

Maximum Potential to Emit Estimate

The West African Gas Pipeline's emissions calculation of **244,728 short tons CO₂** accounts for both combustion emissions from the compression and transmission of natural gas as well as fugitive emissions using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Pipeline Throughput	190 MMscfd	Project Description
Emissions Factors	3439 lbs CO ₂ per MMscfd from combustion 4297 lbs CO ₂ per MMscfd from fugitive	U.S. EIA and EPA GHG Inventory, Tables 3-34 & 3-36

Total-emissions estimate = 244,728 short tons CO₂ per year

$$\frac{190 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{3439 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 108,792 \text{ short tons CO}_2/\text{yr (combustion)}$$

$$\frac{190 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{4297 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 135,936 \text{ short tons CO}_2/\text{yr (fugitive)}$$

2007 Operational Emission Estimate Based On Sponsor Feedback

The West African Gas Pipeline was under construction and not operational during 2007. Since emissions from construction would be below the 100,000 short ton threshold this project is omitted from the 2007 inventory.

2008 Operational Emission Estimate Based On Sponsor Feedback

The West African Gas Pipeline was not operational during 2008. Since emissions would be below the 100,000 short ton threshold this project is omitted from the 2008 inventory.

2009 Operational Emission Estimate Based On Sponsor Feedback

No additional data was available. 2009 data will default to the Maximum Potential to Emit.

2010 Operational Emission Estimate Based On Sponsor Feedback

West African Gas Pipeline's 2010 operational emissions of **91,451 short tons CO₂** was calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Pipeline Throughput	190 MMscfd	Project Description
Emissions Factors	3,439 lbs CO ₂ per MMscfd from combustion 4,297 lbs CO ₂ per MMscfd from fugitive	U.S. EIA and EPA GHG Inventory, Tables 3-34 & 3-36

Total-emissions estimate = 91,451 short tons CO₂ per year

$$\frac{71 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{3,439 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 40,654 \text{ short tons CO}_2/\text{yr (combustion)}$$

$$\frac{71 \text{ MMscf}}{\text{day}} * \frac{333 \text{ day}}{\text{yr}} * \frac{4,297 \text{ lbs CO}_2}{\text{MMscf}} * \frac{\text{short ton}}{2000 \text{ lbs}} = 50,797 \text{ short tons CO}_2/\text{yr (fugitive)}$$

TIER C PROJECTS

Tier C projects were not included in the 2007 and 2008 inventories. As a result, emissions calculations will for these projects will begin for year 2009.

Jose Lindley

2009 GHG Emissions Estimate

Jose Lindley's emissions were estimated to exceed 25,000 metric tonnes. There was no sponsor feedback provided to date. It was estimated the project's emissions would be **25,000 short tons CO₂** for 2009.

2010 GHG Emissions Estimate

No additional data was available. The 2010 emissions estimate will default to the 2009 emissions estimate.

Joshi Technologies / Parko Services

2009 GHG Emissions Estimate

Joshi Technologies / Parko's 2008 project emissions of **30,398 short tons CO₂** were calculated using the following information:

Data	Value	Source
Fuel Type	Natural Gas	Project Description
Consumption	20,000,000 mil cu. meters	Project Description

Consumption-based emissions = 30,398 short tons CO₂ per year

$$20 \text{ MMm}^3 * \frac{35.3 \text{ ft}^3}{\text{M}^3} * \left(\frac{1027 \text{ Btu}}{\text{ft}^3} * \frac{1 \text{ MMBtu}}{1,000,000 \text{ Btu}} \right) * \frac{53.06 \text{ kgCO}_2}{\text{MMBtu}} * \frac{0.0011023 \text{ tons}}{\text{kg}}$$

2010 GHG Emissions Estimate

Joshi Technologies / Parko's 2010 project emissions of **57,826 short tons CO₂** were calculated using the following information:

Data	Value	Source
Internal Combustion Emissions (gas)	4,010 short tons CO ₂	Project Sponsor
External Combustion Emissions (gas)	9,789 short tons CO ₂	Project Sponsor
Flared Gas Emissions	25,927 short tons CO ₂	Project Sponsor
Internal Combustion Emissions (diesel)	18,100 short tons CO ₂	Project Sponsor

Consumption-based emissions = 57,826 short tons CO₂ per year

4,010 short tons CO₂ + 9,789 short tons CO₂ + 25,927 short tons CO₂ + 18,100 short tons CO₂

APPENDIX B – ACTIVE PROJECTS

ACTIVE PROJECTS

This shortlist presents projects screened that were determined to have the potential to emit over 25,000 short tons of CO₂.

Table 3: Active Projects – As of September 30, 2011

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
AFGHAN GROWTH FINANCE LLC	AFGHANISTAN	FIN
AFGHAN GROWTH FINANCE LLC	AFGHANISTAN	FIN
AMERICAN WOOL-CASHMERE, INC.	AFGHANISTAN	SVC
EQUITY CAPITAL MINING, LLC	AFGHANISTAN	MINING
KABUL GRAND RESIDENCES LLC	AFGHANISTAN	CONS
PACIFIC COLLECTION COMPANY/TRIBAL LOOM	AFGHANISTAN	MFG
QWO JOINT STOCK COMPANY	AFGHANISTAN	MFG
QWO JOINT STOCK COMPANY	AFGHANISTAN	MFG
SAFI APPAREL CORPORATION	AFGHANISTAN	MFG
SAFI APPAREL CORPORATON	AFGHANISTAN	MFG
SUMMIT ASSOCIATES, LTD.	AFGHANISTAN	MFG
SUMMIT ASSOCIATES, LTD.	AFGHANISTAN	SVC
SUMMIT ASSOCIATES, LTD.	AFGHANISTAN	SVC
SUSTAINABLE ENERGY SERVICES AFGHANISTAN	AFGHANISTAN	POWER
TAYL INVESTORS GROUP LIMITED	AFGHANISTAN	TOUR
TAYL INVESTORS GROUP-2	AFGHANISTAN	TOUR
FIXED RATE FUNDING & LIQUIDITY LTD (HWD SPA)	ALGERIA	SVC
TIVANNAH GLOBAL, LIMITADA	ANGOLA	MFG
WBC-BANCO REGIONAL DO KEVE S.A.	ANGOLA	FIN
ARGENTINA OLIVE RANCH	ARGENTINA	AGRI
BRAVO ENERGY ARGENTINA SCA	ARGENTINA	OIL
COMPANIA GENERAL DE COMERCIO E INDUSTRIA SA	ARGENTINA	TOUR
DESARROLLOS DE LOS SUENOS, S.A.	ARGENTINA	TOUR
PLAZA LOGISTICA S.R.L.	ARGENTINA	CONS
ARMENIA HOTEL COMPLEX CLOSED JSC	ARMENIA	TOUR
FIRST MORTGAGE COMPANY UCO, LLC	ARMENIA	FIN
WBC-ARDSHININVESTBANK CJSC	ARMENIA	FIN
TBC KREDIT NON-BANKING CREDIT ORGANIZATI LLC	AZERBAIJAN	FIN
TBC KREDIT NON-BANKING CREDIT ORGANIZATI LLC	AZERBAIJAN	FIN
TBC KREDIT NON-BANKING CREDIT ORGANIZATI LLC	AZERBAIJAN	FIN
WBC-MUGANBANK OJSC	AZERBAIJAN	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
WBC-RABITABANK OJSC	AZERBAIJAN	FIN
WBC-RABITABANK OJSC	AZERBAIJAN	FIN
WBC-TURANBANK OJSC	AZERBAIJAN	FIN
CASIA-BRAC	BANGLADESH	FIN
CASIA-PACIFIC BANGLADESH TELECOM LIMITED	BANGLADESH	COMM
NEPC CONSORTIUM POWER LTD.(HARIPUR)	BANGLADESH	POWER
VISTAS BELIZE LTD	BELIZE	CONS
SERVICIO GRAFICOS QUIPUS	BOLIVIA	MFG
GOLDHAM PTY LTD.T/A KALAHARI GAS CORPORATION	BOTSWANA	OIL
GOLDHAM PTY LTD.T/A KALAHARI GAS CORPORATION	BOTSWANA	OIL
GOLDHAM PTY LTD.T/A KALAHARI GAS CORPORATION	BOTSWANA	OIL
ACAI DO AMAPA AGROINDUSTRIAL LTDA.	BRAZIL	MFG
BRAZILIAN EMERALDS,INC.	BRAZIL	MINING
C21 BRASIL DESENVOLVIMENTO IMOBILAIRIO LTDA	BRAZIL	FIN
CSI LATINA FINANCIAL, INC/CSI LATINA ARRENDA	BRAZIL	FIN
MORUMBY HOTEIS LTDA.	BRAZIL	TOUR
NCB2-BANCO MERCANTIL DO BRASIL S.A.	BRAZIL	FIN
NCB3-BANCO PINE S.A.	BRAZIL	FIN
W3-BANCO FIBRA, S.A.	BRAZIL	FIN
W3-BANCO INDUSTRIAL E COMERCIAL S.A.	BRAZIL	FIN
W3-BANCO PINE, S.A.	BRAZIL	FIN
W3-BANCO SAFRA S.A.	BRAZIL	FIN
AMERICAN UNIVERSITY IN BULGARIA	BULGARIA	SVC
SEAF-FBT AD (JIMMY'S)	BULGARIA	SVC
CMFI-AGENCE DE CREDIT POUR L'ENTREPRISE PRIV	CAMEROON	FIN
NATURA BEVERAGE LLC	CAMEROON	MFG
NATURA BEVERAGE, LLC	CAMEROON	MFG
SOCIEDAD CONCESIONARIA VESPUCIO NORTE EXPRES	CHILE	CONS
TB-DRISCOLL STRAWBERRY ASSOCIATES, INC.	CHILE	AGRI
JOSHI TECHNOLOGIES INTERNATIONAL INC	COLOMBIA	OIL
JOSHI TECHNOLOGIES INTERNATIONAL INC. III	COLOMBIA	OIL
JOSHI TECHNOLOGIES INTERNATIONAL, INC.	COLOMBIA	OIL
LEAWOOD INVESTMENTS INC/BARRIEFIELD LLC	COLOMBIA	AGRI
PARKO SERVICES S.A.	COLOMBIA	OIL
PARKO SERVICES, S.A.	COLOMBIA	OIL
PARKO SERVICES, S.A.	COLOMBIA	OIL
AERIS HOLDING COSTA RICA, S.A..	COSTA RICA	TRAN
BANCO BAC SAN JOSE, S.A. (TRANCHE A)	COSTA RICA	FIN
BANCO BAC SAN JOSE, S.A. (TRANCHE B)	COSTA RICA	FIN
BANCO LAFISE S.A.	COSTA RICA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
BANCO LAFISE, S.A. (TRANCHE 2)	COSTA RICA	FIN
BANCO LAFISE, S.A. (TRANCHE 3)	COSTA RICA	FIN
CCA2-BANCA PROMERICA, S.A.	COSTA RICA	FIN
CCA2-GRUPO M HOLDING S.A.	COSTA RICA	FIN
CONDOMINIOS RIVERSIDE ETAPA II, S.A.	COSTA RICA	CONS
RODBLU PARTNERS CRP S.A.	COSTA RICA	CONS
WBC-BANCO IMPROSA S.A.	COSTA RICA	FIN
CMFI-2-BANCO PROCREDIT S.A.	ECUADOR	FIN
CORPORACION QUIPORT S.A.	ECUADOR	TRAN
CSA-BANCO PROCREDIT ECUADOR	ECUADOR	FIN
MEDPHARM, INC.	ETHIOPIA	SVC
AMERICAN MONOLITH LTD	GEORGIA	TRAN
AUTO SERVICE CAUCASUS LTD	GEORGIA	SVC
BETSY, LLC	GEORGIA	TOUR
CHOUS-JOINT STOCK COMPANY TBC BANK	GEORGIA	FIN
GMT MTATSMINDA, LLC	GEORGIA	SVC
GMT REAL ESTATE, LLC.	GEORGIA	FIN
JOINT STOCK COMPANY HOTEL TBILISI	GEORGIA	TOUR
JSC BANK OF GEORGIA	GEORGIA	FIN
JSC BANK OF GEORGIA	GEORGIA	FIN
JSC IBERIA REAL ESTATE	GEORGIA	CONS
JSC POPULI	GEORGIA	SVC
JSC PROCREDIT BANK GEORGIA	GEORGIA	FIN
JSC PROCREDIT BANK GEORGIA	GEORGIA	FIN
MTKVARI HPP, LLC	GEORGIA	POWER
SANTE GMT PRODUCTS LLC	GEORGIA	MFG
TELIANI VALLEY JSC	GEORGIA	MFG
UNIVERSITY OF GEORGIA	GEORGIA	SVC
WBC-BANK OF GEORGIA	GEORGIA	FIN
WBC-GEORGIAN LEASING COMPANY, LLC	GEORGIA	FIN
WBC-JSC BASISBANK II	GEORGIA	FIN
WBC-JSC BASISBANK	GEORGIA	FIN
WBC-JSC BASISBANK	GEORGIA	FIN
AFRICAN-AMERICAN TRADING COMPANY, INC.	GHANA	MFG
GHANA HOME LOANS (FUND 1) LIMITED	GHANA	FIN
GHANA HOME LOANS (FUND 1) LIMITED	GHANA	FIN
INTERNATIONAL COMMUNITY SCHOOL LIMITED	GHANA	SVC
LAGRAY CHEMICAL COMPANY LTD	GHANA	MFG
SLID INDUSTRIES, LTD.	GHANA	MFG
BANCO DE AMERICA CENTRAL, S.A. (TRANCHE A)	GUATEMALA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
BANCO DE AMERICA CENTRAL, S.A. (TRANCHE B)	GUATEMALA	FIN
CHOUS-BANRURAL S.A.	GUATEMALA	FIN
FLAMA DE ORO S.A.	GUATEMALA	AGRI
FLAMA DE ORO, S.A.	GUATEMALA	AGRI
LA FUTURA, S.A.	GUATEMALA	AGRI
W3-BANCO REFORMADOR, S.A.	GUATEMALA	FIN
WBC-NUEVOS ALMACENES S.A. D/B/A/ CEMACO	GUATEMALA	SVC
HAITI 360	HAITI	MFG
INNOVIDA HOLDINGS LLC	HAITI	MFG
BANCO DE AMERICA CENTRAL HONDURAS, S.A.(TR A	HONDURAS	FIN
BANCO DE AMERICA CENTRAL HONDURAS, S.A.(TR B	HONDURAS	FIN
BANCO LAFISE HONDURAS, S.A.	HONDURAS	FIN
BANCO LAFISE HONDURAS, S.A.	HONDURAS	FIN
CCA2-DIGICEL HONDURAS S.A. DE CV	HONDURAS	COMM
CHOUS-BANCO FINANCIERA COMMERCIAL HONDURENA	HONDURAS	FIN
CSA-GRUPO JAREMAR (BUFINSA,INDASA,OLEPSA)	HONDURAS	MFG
GHP(HONDURAS)LLC/GLOBAL HOUSING DEVELOPMENT	HONDURAS	CONS
INTER-MAC INTERNATIONAL, INC.	HONDURAS	FIN
W2-BANCO ATLANTIDA	HONDURAS	FIN
WBC-COMERCIAL LAEISZ, S.A. DE C.V.	HONDURAS	SVC
PANNONIA ETHANOL ZTR	HUNGARY	MFG
APPLIED SOLAR TECHNOLOGIES INDIA PRIVATE LTD	INDIA	POWER
AZURE POWER (GUJARAT) PVT LTD - SUNEDISON	INDIA	MFG
AZURE POWER HARYANA PRIVATE LIMITED	INDIA	POWER
AZURE POWER PUNJAB PRIVATE LIMITED	INDIA	POWER
AZURE POWER PUNJAB PRIVATE LIMITED	INDIA	POWER
AZURE POWER RAJASTHAN PRIVATE LIMITED	INDIA	POWER
CASIA-SPANDANA SPHOORTY FINANCIALS LTD	INDIA	FIN
CASIA-SPANDANA SPHOORTY FINANCIALS LTD	INDIA	FIN
CASIA-SPANDANA SPHOORTY FINANCIALS LTD	INDIA	FIN
CMFI-ASA GRAMA VIDYAL TRUST	INDIA	FIN
CMFI-BHARTIYA SAMRUDDHI FINANCE LTD.	INDIA	FIN
CMFI-GRAMEEN FINANCIAL SERVICES PRIVATE LTD	INDIA	FIN
CMFI-SKS MICROFINANCE PVT LTD	INDIA	FIN
CMFI-SPANDANA SPHOORTY FINANCIAL LIMITED	INDIA	FIN
ESP URYA PRIVATE LIMITED	INDIA	POWER
HUSK POWER SYSTEMS, INC.	INDIA	POWER
QUANTUMID TECHNOLOGIES (INDIA) PVT. LTD.	INDIA	SVC
SOLARIA INDIA PRIVATE LIMITED	INDIA	POWER
TRIPOS INTERNATIONAL SCHOOL, PVT. LTD.	INDIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
UNI-MIMOZA FINANCE ENTERPRISES PVT. LTD.	INDIA	FIN
W3-YES BANK LIMITED	INDIA	FIN
WBC-AIR WORKS INDIA	INDIA	TRAN
WBC-PREFERRED BRANDS INTERNATIONAL, LLC	INDIA	MFG
WBC-PREFERRED BRANDS INTERNATIONAL, LLC	INDIA	MFG
CMFI-2-BANK DANAMON INDONESIA PT TBK	INDONESIA	FIN
PAITON ENERGY COMPANY	INDONESIA	POWER
PAITON ENERGY COMPANY	INDONESIA	POWER
PT. LUMBUNG PADI INDONESIA	INDONESIA	MFG
PT. TUCAN PUMPCO SERVICES INDONESIA	INDONESIA	OIL
PT. TUCAN PUMPCO SERVICES INDONESIA	INDONESIA	OIL
AL TAMWEEL AL SAREE LIMITED	IRAQ	FIN
IRAQ MIDDLE MARKET DEVELOPMENT FOUNDATION	IRAQ	FIN
IRAQ MIDDLE MARKET DEVELOPMENT FOUNDATION	IRAQ	FIN
IRAQ MIDDLE MARKET DEVELOPMENT FOUNDATION	IRAQ	FIN
NORTHERN GULF RENTALS LIMITED	IRAQ	SVC
SUMMIT HOTELS LIMITED/SUMMIT GLOBAL GROUP	IRAQ	TOUR
EPISCOPAL CHURCH OF JERUSALEM & THE MIDDLE E	ISRAEL	CONS
KORET ISRAEL ECONOMIC DEVELOPMENT FUNDS	ISRAEL	FIN
AMERICAN INTERNATIONAL SCHOOL OF KINGSTON	JAMAICA	SVC
AES JORDAN PSC	JORDAN	POWER
ARAB BANK PLC	JORDAN	FIN
CAFR-MIDDLE EAST COMPLEX FOR ENGINEERING	JORDAN	MFG
CAFR-MIDDLE EAST COMPLEX FOR ENGINEERING	JORDAN	MFG
CAIRO AMMAN BANK	JORDAN	FIN
DISI WATER PSC	JORDAN	SVC
INTL CO FOR ENERGY TECHNOLOGY INDUSTRIES	JORDAN	CONS
CHOUS2-JSC BANK CENTERCREDIT	KAZAKHSTAN	FIN
CHOUS2-JSC HALYK SAVINGS BANK	KAZAKHSTAN	FIN
NCB2 -BANK TURAN ALEM	KAZAKHSTAN	FIN
NCB2 -BANK TURAN ALEM	KAZAKHSTAN	FIN
NCB3-ALLIANCE BANK JSC	KAZAKHSTAN	FIN
NCB3-ALLIANCE BANK JSC	KAZAKHSTAN	FIN
NCB3-ATF BANK JSC	KAZAKHSTAN	FIN
NCB3-BANK CENTER CREDIT JSC	KAZAKHSTAN	FIN
W2-JSC BANK TURAN ALEM	KAZAKHSTAN	FIN
W2-JSC BANK TURAN ALEM	KAZAKHSTAN	FIN
CMFI-FAULU KENYA	KENYA	FIN
CMFI-KENYA WOMEN FINANCE TRUST LTD	KENYA	FIN
CMFI-KENYA WOMEN FINANCE TRUST LTD	KENYA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
ECO-METROPOLITAN DEVELOPMENT CO. LTD.	KENYA	CONS
JOPA VILLAS, LLC	KENYA	CONS
LIVING WATER INTERNATIONAL	KENYA	SVC
ORPOWER 4 GEOTHERMAL	KENYA	POWER
MAJESTIC GROUP KOREA, LTD.	KOREA (SOUTH)	SVC
CHF/L-COOPERATIVE HOUSING FOUNDATION LEBANON	LEBANON	FIN
CHF/L-CREDIT LEBANAIS BANK	LEBANON	FIN
CHF/L-FRANSABANK S.A.L.	LEBANON	FIN
CHF/L-JAMAL TRUST BANK S.A.L.	LEBANON	FIN
CLEB2A-BANK AUDI SAL-AUDI SARADAR GROUP	LEBANON	FIN
CLEB2A-BANKMED S.A.L.	LEBANON	FIN
CLEB2A-BYBLOS BANK SAL	LEBANON	FIN
CLEB2-BANK AUDI SAL-AUDI SARADAR GROUP	LEBANON	FIN
CLEB-BANKMED S.A.L.	LEBANON	FIN
CLEB-BANQUE LIBANO-FRANCAISE S.A.L.	LEBANON	FIN
CLEB-BYBLOS BANK S.A.L.	LEBANON	FIN
THE COOPERATIVE HOUSING FOUNDATION LEBANON	LEBANON	FIN
AMERICAN INTERNATIONAL SCHOOL OF MONROVIA IN	LIBERIA	SVC
BROAD COVE ECOHOMES LIBERIA, INC.	LIBERIA	CONS
BUCHANAN RENEWABLES (MONROVIA) POWER INC.	LIBERIA	POWER
BUCHANAN RENEWABLES FUEL INC.	LIBERIA	MFG
BUCHANAN RENEWABLES FUEL, INC.	LIBERIA	MFG
LIBERIAN ENTERPRISE DEVELOPMENT FINANCE CO.	LIBERIA	FIN
RLJ LIBERIA, LLC	LIBERIA	CONS
SABLE-CELLCOM TELECOMMS INC	LIBERIA	COMM
AMERICAN INTERNATIONAL SCHOOL OF BAMAKO	MALI	SVC
CASAMAR MAURITIUS, LTD./CASAMAR INDIAN OCEAN	MAURITIUS	MFG
BRAVO ENERGY MEXICO SRL DE CV	MEXICO	OIL
CMFI-FUNDACION INTEGRAL COMUNITARIA (FINCA)	MEXICO	FIN
CSI LATINA FINANCIAL, INC./CSI LEASING MEXIC	MEXICO	FIN
CSI LATINA FINANCIAL, INC./CSI LEASING MEXIC	MEXICO	FIN
PREFABRICADOS Y MODULARES DE MONTERREY(PYMM)	MEXICO	CONS
PROMOTORA DE INFRAESTRUCTURA REGISTRAL, S.A.	MEXICO	FIN
REFORMA BLN-BACKED I	MEXICO	FIN
SALVATIERRA DESARROLLOS URBANOS, S.A. DE C.V	MEXICO	FIN
TB-ANDREW & WILLIAMSON FRESH PRODUCE	MEXICO	AGRI
UMBRALCAPITAL, S.A.P.I. DE C.V.	MEXICO	FIN
VEHICULOS LIQUIDOS FINANCIEROS SAPI DE C.V.	MEXICO	FIN
WBC -OPERADORA DE SERVICIOS MEGA, S.A. DE C.	MEXICO	FIN
WBC-ANALISTAS DE RECURSOS GLOBALES SAPI DE CV	MEXICO	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
WBC-DOCUFORMAS S.A.P.I. DE C.V.	MEXICO	FIN
WBC-MARICULTURA DEL NORTE, S.DE R.L. DE C.V.	MEXICO	AGRI
WBC-SOUTHERN VALLEY FRUIT & VEGETABLE, INC.	MEXICO	AGRI
WBC-VALLARTA VISION Y MISION A.C.	MEXICO	SVC
BANCA DE FINANTE SI COMERT S.A.	MOLDOVA	FIN
WBC-ICS PRIME CAPITAL SRL	MOLDOVA	FIN
WBC-KELLEY GRAINS CORPORATION S.R.L.	MOLDOVA	MFG
GN BEVERAGES	MONGOLIA	MFG
IKH TOKHOIROL LLC	MONGOLIA	MINING
NAMGEM TRADING BVI LIMITED	NAMIBIA	MFG
BANCO DE AMERICA CENTRAL, S.A. (TRANCHE A)	NICARAGUA	FIN
BANCO DE AMERICA CENTRAL, S.A. (TRANCHE B)	NICARAGUA	FIN
BANCO DE CREDITO CENTROAMERICANO, S.A.	NICARAGUA	FIN
BANCO DE CREDITO CENTROAMERICANO, S.A.	NICARAGUA	FIN
CHOUS-BANCO DE LA PRODUCCION S.A.	NICARAGUA	FIN
GILBERTO J.M.GONZALEZ/DBA/FERRETERIA MORALES	NICARAGUA	SVC
INSTITUTO CULINARIO SANTA LUCIA,S.A.	NICARAGUA	SVC
AMERICAN INTERNATIONAL SCHOOL OF ABUJA	NIGERIA	SVC
CAFR-AMERICAN INTERNATIONAL SCHOOL LAGOS	NIGERIA	SVC
CAFR-BEL PAPYRUS LIMITED	NIGERIA	MFG
PTSM HOLDINGS LIMITED/PTS EQUIPMENT LIMITED	NIGERIA	SVC
UNION GLOBAL PARTNERS LIMITED	NIGERIA	FIN
AMERICAN INTERNATIONAL SCHOOL SYSTEMS, INC.	PAKISTAN	SVC
CPAK2-ENGRO VOPAK TERMINAL LTD	PAKISTAN	MFG
CPAK2-KASHF FOUNDATION	PAKISTAN	FIN
EMERGING MARKETS CONSULTING (PRIVATE) LTD.	PAKISTAN	FIN
SWEETWATER PAKISTAN (PRIVATE) LIMITED	PAKISTAN	MFG
TAMEER MICROFINANCE BANK LIMITED	PAKISTAN	FIN
TOWERSHARE (PVT) LTD.	PAKISTAN	COMM
TPL PROPERTIES (PVT) LIMITED	PAKISTAN	CONS
BAC INTERNATIONAL BANK,INC. (TRANCHE A)	PANAMA	FIN
BAC INTERNATIONAL BANK,INC. (TRANCHE B)	PANAMA	FIN
CHOUS2-GLOBAL BANK CORPORATION	PANAMA	FIN
CSA-DIGICEL PANAMA S.A.	PANAMA	COMM
LA HIPOTECARIA PANAMANIAN MORTGAGE TRUST 10	PANAMA	FIN
LAFISE GROUP PANAMA, INC.	PANAMA	FIN
W3-CREDICORP BANK, S.A.	PANAMA	FIN
E.P. INTEROIL, LTD.	PAPUA NEW GUINEA	OIL
CHOUS2-BANCO CONTINENTAL S.A.E.C.A.	PARAGUAY	FIN
CHOUS2-BANCO REGIONAL S.A.E.C.A.	PARAGUAY	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
CMFI-2-BANCO FAMILIAR S.A.E.C.A.	PARAGUAY	FIN
CMFI-2-GRUPO INTERNACIONAL DE FINANZAS SAECA	PARAGUAY	FIN
CMFI-2-VISION BANCO S.A.E.C.A.	PARAGUAY	FIN
CSA-BANCO REGIONAL, S.A.	PARAGUAY	FIN
CSA-BBVA PARAGUAY S.A.	PARAGUAY	FIN
CSA-INTERBANCO S.A.	PARAGUAY	FIN
FINANCIERA TFC, S.A.	PERU	FIN
GAMMA KNIFE PERU	PERU	SVC
GLOBOKAS PERU, S.A.C.	PERU	FIN
GTS MAJES S.A.C. AND GTS REPARTICION S.A.C.	PERU	POWER
SEAF SME DEBT FACILITY LLC (OUTSOURCING PERU)	PERU	TRAN
SEAF SME DEBT FACILITY LLC (SUNSHINE EXPORT)	PERU	AGRI
W3-BANCO FINANCIERO DEL PERU, S.A.	PERU	FIN
W3-BANCO INTERAMERICANO DE FINANZAS, S.A.	PERU	FIN
CMFI-2-ASA PHILIPPINES	PHILIPPINES	FIN
COUNTERPART INTERNATIONAL, INC.	PHILIPPINES	FIN
GOLDEN CYPRESS WATER CO. LTD.	PHILIPPINES	MFG
AMTECH SP.ZO.O	POLAND	CONS
SEAF SME DEBT FACILITY LLC (MATRAS SA)	POLAND	SVC
CMFI-OPPORTUNITY MICROCREDIT ROMANIA ("OMRO")	ROMANIA	FIN
EXPRESS FINANCE-INSTITUTIE FINANCIARA NEBAN	ROMANIA	FIN
PATRIA CREDIT INSTITUTIE FINANCIARA NEBAN SA	ROMANIA	FIN
THE COOPERATIVE HOUSING FOUNDATION	ROMANIA	FIN
VERIDA CREDIT IFN S.A.	ROMANIA	FIN
ABAMEDIA, L.P.(TRANCHE A)	RUSSIA	SVC
CMFI-CJSC FORUS BANK	RUSSIA	FIN
DATASPACE PARTNERS, LLC	RUSSIA	FIN
DMITROV DAIRY FARMS, CJSC	RUSSIA	AGRI
HERMITAGE HOSPITALITY FRANCHISING LIMITED	RUSSIA	TOUR
NCB3-CENTER-INVEST BANK JSC	RUSSIA	FIN
NCB3-LOCKO BANK	RUSSIA	FIN
NCB3-ROSEUROBANK	RUSSIA	FIN
NCB3-TRANSCAPITAL BANK JSC	RUSSIA	FIN
NEW YORK PIZZA CO. LTD.	RUSSIA	SVC
NUMOTECH, INC.	RUSSIA	MFG
PJ DEVELOPMENT LLC	RUSSIA	SVC
PJ WESTERN RETAIL INVESTMENTS LTD II	RUSSIA	SVC
RKU FRANCHISING LIMITED	RUSSIA	FIN
RPK-VYSOTSK "LUKOIL-II"	RUSSIA	OIL
SUBWAY RUSSIA, LLC	RUSSIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
WBC-CREDIT-MOSCOW BANK JOINT STOCK COMPANY	RUSSIA	FIN
WBC-INDEPENDENT LEASING, LLC	RUSSIA	FIN
WBC-JSC POLIGRAF LAND	RUSSIA	MFG
WBC-NBD BANK JOINT STOCK COMPANY	RUSSIA	FIN
WBC-NBD BANK JOINT STOCK COMPANY	RUSSIA	FIN
WBC-OJSC COMMERCIAL BANK "SDM-BANK"	RUSSIA	FIN
WBC-OJSC SDM-BANK (II)	RUSSIA	FIN
WBC-PETERSBURG SOCIAL COMMERCIAL BANK OJSC	RUSSIA	FIN
WBC-SOTSYALNIY GORODSKOY BANK (SOTSGORBANK)	RUSSIA	FIN
WBC-ZAO AIRES	RUSSIA	SVC
WBC-ZAO AIRES	RUSSIA	SVC
ZAO COMMERCIAL BANK DELTACREDIT	RUSSIA	FIN
ZAO EUROPLAN	RUSSIA	FIN
ZAO NUMOTECH-SPEKTR	RUSSIA	MFG
ZAO STAR NETWORKS	RUSSIA	COMM
BLUE FINANCIAL SERVICES LIMITED	SOUTH AFRICA	FIN
BLUE FINANCIAL SERVICES LIMITED	SOUTH AFRICA	FIN
BLUE FINANCIAL SERVICES LIMITED	SOUTH AFRICA	FIN
BLUE FINANCIAL SERVICES LIMITED	SOUTH AFRICA	FIN
HOUSING FOR HIV, INC.	SOUTH AFRICA	FIN
SHARED INTEREST, INC.	SOUTH AFRICA	FIN
SOUTH AFRICA FINANCING ENTERPRISE	SOUTH AFRICA	CONS
WBC-BLUE FINANCIAL SERVICES LIMITED	SOUTH AFRICA	FIN
CASIA-LANKA ORIX LEASING COMPANY LTD.	SRI LANKA	FIN
NORTH STAR ST. KITTS, LTD.	ST. CHRISTOPHER-NEVIS	POWER
BRAC AFRICA MICROFINANCE, LTD. (CLASS A)	TANZANIA	FIN
BRAC AFRICA MICROFINANCE, LTD. (CLASS B)	TANZANIA	FIN
CAFR-MIC TANZANIA LIMITED (TZS)	TANZANIA	COMM
CAFR-MIC TANZANIA LIMITED (USD)	TANZANIA	COMM
TANRUSS INVESTMENT LTD	TANZANIA	TOUR
WBC-AFRICAN BANKING CORPORATION TANZANIA LTD	TANZANIA	FIN
PACIFIC SUBSEA SAIPAN 2	THAILAND	TRAN
PACIFIC SUBSEA SAIPAN 3	THAILAND	TRAN
PACIFIC SUBSEA SAIPAN, INC.	THAILAND	TRAN
SUNEDISON THAILAND	THAILAND	POWER
CONTOURGLOBAL TOGO S.A.	TOGO	POWER
ADAPAZARI ELEKTRIK URETIM LTD. SIRKETI	TURKEY	POWER
CHOUS2-BANK POZITIF	TURKEY	FIN
CMFI-2-SEKERBANK T.A.S.	TURKEY	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
GEBZE ELEKTRIK URETIM LTD SIRKETI	TURKEY	POWER
ISTANBUL INTERNATIONAL COMMUNITY SCHOOL (B)	TURKEY	SVC
ISTANBUL INTERNATIONAL COMMUNITY SCHOOL,INC.	TURKEY	SVC
ISTANBUL MORTGAGE FINANSMAN A.S.	TURKEY	FIN
IZMIR ELEKTRIK URETIM LTD SIRKETI	TURKEY	POWER
NCB2-ASYA KATILIM BANKASI A.S.	TURKEY	FIN
NCB2-TURK EKONOMI BANKASI A.S. PURPOSE B	TURKEY	FIN
SOM OTELCILIK VE TURIZM TICARET A.S.	TURKEY	TOUR
SOM OTELCILIK VE TURIZM TICARET A.S.	TURKEY	TOUR
TURKIYE GARANTI BANKASI A.S.	TURKEY	FIN
W2-AKBANK T.A.S.	TURKEY	FIN
W2-TURK EKONOMI BANKASI A.S.	TURKEY	FIN
W3-BANKPOZITIF KREDIT VE KALKINAM BANKASI	TURKEY	FIN
W3-SEKERBANK A.S.	TURKEY	FIN
W3-TURKIYE GARANTI BANKASI AS	TURKEY	FIN
WBC-DELTA PLASTIK ENDUSTRISI A.S.	TURKEY	MFG
WBC-DELTA PLASTIK ENDUSTRISI A.S.	TURKEY	MFG
WBC-DELTA PLASTIK ENDUSTRISI A.S.	TURKEY	MFG
WBC-FERSAN FERMANTASYON URUN SAN. VE TIC.A.S	TURKEY	MFG
WBC-INTERFARMA TIBBI MALZEMELER SANAYI VE TI	TURKEY	MFG
WBC-SFC ENTEGRE ORMAN URUNLERI SANAYI VE TIC	TURKEY	MFG
CMFI-PRIDE UGANDA	UGANDA	FIN
CMFI-UGANDA FINANCE TRUST	UGANDA	FIN
MAPSWITCH UGANDA LTD	UGANDA	FIN
PLATINUM BANK OPEN JOINT STOCK COMPANY	UKRAINE	FIN
WBC-ATLANTIC GROUP LIMITED	UKRAINE	SVC
WBC-DEGRESS HOLDINGS LIMITED	UKRAINE	SVC
WINNER GROUP UKRAINE, INC.	UKRAINE	SVC
O&S CONSULTING, L.L.C.	UZBEKISTAN	CONS
ACCESS AFRICA FUND	VARIOUS	FIN
AEGIS INVESTMENT COMPANY	VARIOUS	FIN
CALVERT SOCIAL INVESTMENT FOUNDATION	VARIOUS	FIN
CASANOVO AFFORDABLE HOUSING FUND I, L.P.	VARIOUS	CONS
CONTOURGLOBAL SOLUTIONS HOLDINGS LIMITED	VARIOUS	POWER
CSI LATINA FINANCIAL,INC/CSI LEASING DE CENT	VARIOUS	FIN
CSI LEASING POLSKA SP.Z.O.O ET AL	VARIOUS	FIN
DOMES INTERNATIONAL, INC.	VARIOUS	MFG
E+CO., INC	VARIOUS	POWER
EMERGENCY LIQUIDITY FACILITY, L.P.	VARIOUS	FIN
EYE FUND 1, LLC	VARIOUS	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
GLOBAL MICROFINANCE FACILITY LTD.	VARIOUS	FIN
GLOBAL MICROFINANCE FACILITY LTD.	VARIOUS	FIN
GLOBAL PARTNERSHIPS MICROFINANCE FUND2006LLC	VARIOUS	FIN
GLOBAL PARTNERSHIPS MICROFINANCE FUND2008LLC	VARIOUS	FIN
GLOBAL PARTNERSHIPS MICROFINANCE FUND2008LLC	VARIOUS	FIN
GLOBAL PARTNERSHIPS SOCIAL INV. FUND 2010LLC	VARIOUS	FIN
GLOBAL PARTNERSHIPS SOCIAL INV. FUND 2010LLC	VARIOUS	FIN
GRASSROOTS BUSINESS FUND	VARIOUS	FIN
MXF SOLUTIONS, INC.	VARIOUS	FIN
MICROFINANCE GROWTH FUND, LLC	VARIOUS	FIN
MICROVEST I, LP	VARIOUS	FIN
MINLAM MICROFINANCE FUND (2)	VARIOUS	FIN
PROCREDIT HOLDING A.G.	VARIOUS	FIN
PROCREDIT HOLDING A.G.	VARIOUS	FIN
ROOT CAPITAL II	VARIOUS	FIN
ROOT CAPITAL INC.	VARIOUS	FIN
SEAF-SILATECH MENA SME FINANCE COMPANY LLC	VARIOUS	FIN
TB-AIR DRILLING ASSOCIATES	VARIOUS	OIL
WILPRO ENERGY SERVICES (EL FURRIAL) LIMITED	VENEZUELA	OIL
WILPRO ENERGY SERVICES (PIGAP II) LTD.	VENEZUELA	OIL
AUSTRALIS AQUACULTURE LLC	VIETNAM	AGRI
AMAL-CAIRO AMMAN FOR FINANCING FLTG LOANS PL	WEST BANK & GAZA	FIN
AMAL-CAIRO AMMAN FOR FINANCING FXD LOANS PLC	WEST BANK & GAZA	FIN
AMAL-PALESTINE FOR FINANCING FIXED LOANS PLC	WEST BANK & GAZA	FIN
AMAL-PALESTINE FOR FINANCING FLTG LOANS PLC	WEST BANK & GAZA	FIN
MEII-2-ARAB BANK	WEST BANK & GAZA	FIN
MEII-AL RAFAH BANK	WEST BANK & GAZA	FIN
MEII-AL-QUDS BANK FOR DEVELOPMENT & INVEST	WEST BANK & GAZA	FIN
MEII-ARAB BANK	WEST BANK & GAZA	FIN
MEII-BANK OF JORDAN	WEST BANK & GAZA	FIN
MEII-BANK OF PALESTINE (MOVENPICK)	WEST BANK & GAZA	TOUR
MEII-BANK OF PALESTINE (WATANIYA)	WEST BANK & GAZA	COMM
MEII-BANK OF PALESTINE	WEST BANK & GAZA	FIN
MEII-BANK OF PALESTINE	WEST BANK & GAZA	FIN
MEII-BANK OF PALESTINE-FATEN MICROFINANCE	WEST BANK & GAZA	FIN
MEII-CAIRO AMMAN BANK - FATEN MICROFINANCE	WEST BANK & GAZA	FIN
MEII-CAIRO AMMAN BANK (MOVENPICK)	WEST BANK & GAZA	TOUR
MEII-CAIRO AMMAN BANK	WEST BANK & GAZA	FIN
MEII-HOUSING BANK FOR TRADE AND FINANCE	WEST BANK & GAZA	FIN
MEII-JORDAN AHLI BANK	WEST BANK & GAZA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FINANCE		
MEII-PALESTINE COMMERCIAL BANK	WEST BANK & GAZA	FIN
MEII-QUDS BANK (WATANIYA)	WEST BANK & GAZA	COMM
MIDDLE EAST INVESTMENT INITIATIVE, INC.	WEST BANK & GAZA	FIN
MIDDLE EAST INVESTMENT INITIATIVE, INC.	WEST BANK & GAZA	FIN
PARTNERS FOR SUSTAINABLE DEV'MENT -NETKETABI	WEST BANK & GAZA	FIN
CASIA-DIGICEL (SAMOA) LIMITED	WESTERN SAMOA	COMM
AMERICAN EMBASSY SCHOOL OF LUSAKA	ZAMBIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
AFGHANISTAN BEVERAGE INDUSTRIES (ABI GROUP, LIMITED)	AFGHANISTAN	MFG
AFGHANISTAN BEVERAGE INDUSTRIES (ABI GROUP, LIMITED)	AFGHANISTAN	MFG
AFGHANISTAN BEVERAGE INDUSTRIES (ABI GROUP, LIMITED)	AFGHANISTAN	MFG
ARC CONSTRUCTION COMPANY, LLC	AFGHANISTAN	CONS
ASIA FOUNDATION	AFGHANISTAN	SVC
ASIA FOUNDATION	AFGHANISTAN	SVC
INTERNATIONAL FOUNDATION OF HOPE	AFGHANISTAN	AGRI
INTERNATIONAL FOUNDATION OF HOPE	AFGHANISTAN	AGRI
INTERNATIONAL RESCUE COMMITTEE, KABUL OFFICE/CENTRAL FIELD	AFGHANISTAN	SVC
INTERNATIONAL RESCUE COMMITTEE, KABUL OFFICE/CENTRAL FIELD	AFGHANISTAN	SVC
N/A	AFGHANISTAN	SVC
NOT APPLICABLE	AFGHANISTAN	MFG
RELIEF INTERNATIONAL BRANCH OFFICE	AFGHANISTAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	AFGHANISTAN	SVC
UNKNOWN	AFGHANISTAN	SVC
UNKNOWN	AFGHANISTAN	SVC
UNKNOWN	ALBANIA	SVC
KWABA - SOCIEDADE INDUSTRIAL E COMERCIAL, S.A.R.L.	ANGOLA	MFG
N/A	ANGOLA	SVC
TIVANNAH GLOBAL, LIMITADA	ANGOLA	MFG
UNKNOWN	ANTIGUA/BARBUDA	SVC
ARGENTINA OLIVE RANCH, S.A.	ARGENTINA	AGRI
FINCA LA CRUZ	ARGENTINA	AGRI
N/A	ARMENIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
INKISHAF UCHUN MALIYYE ("FINDEV")	AZERBAIJAN	FIN
N/A	AZERBAIJAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	AZERBAIJAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	AZERBAIJAN	SVC
THE BAKU-TBILISI-CEYHAN PIPELINE COMPANY	AZERBAIJAN	OIL
UNKNOWN	AZERBAIJAN	SVC
N/A	BANGLADESH	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	BANGLADESH	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	BANGLADESH	SVC
THE ASIA FOUNDATION	BANGLADESH	SVC
THE ASIA FOUNDATION	BANGLADESH	SVC
UNKNOWN	BANGLADESH	SVC
WEST AFRICAN GAS PIPELINE COMPANY LIMITED	BENIN	OIL
AXS BOLIVIA S.A.	BOLIVIA	COMM
EMPRESA MINERA MANQUIRI S.A.	BOLIVIA	MINING
UNKNOWN	BOLIVIA	SVC
UNKNOWN	BOSNIA-HERZEGOVINA	SVC
UNKNOWN	BOTSWANA	SVC
ACAI DO AMAPA AGROINDUSTRIAL LTDA.	BRAZIL	MFG
BANCO PINE	BRAZIL	FIN
BRASIL TELECOM, S.A.	BRAZIL	COMM
INTERNATIONAL RESCUE COMMITTEE	BURUNDI	SVC
UNKNOWN	BURUNDI	SVC
CREDIT LIMITED	CAMBODIA	FIN
FORESTRY ADMINISTRATION OF THE ROYAL GOVERNMENT OF CAMBODIA	CAMBODIA	SVC
THE ASIA FOUNDATION	CAMBODIA	SVC
THE ASIA FOUNDATION	CAMBODIA	SVC
ADVANS CAMEROON	CAMEROON	FIN
INTERNATIONAL RESCUE COMMITTEE	CENTRAL AFRICAN REPUBLIC	SVC
INTERNATIONAL RESCUE COMMITTEE	CHAD	SVC
FUNDACIÓN MUNDO MUJER	COLOMBIA	FIN
FUNDACIÓN MUNDO MUJER	COLOMBIA	FIN
SECTOR RESOURCES, LTD. BRANCH	COLOMBIA	MINING
SECTOR RESOURCES, LTD. BRANCH	COLOMBIA	MINING
TERMOVALLE S.C.A. .E.S.P.	COLOMBIA	POWER
TERMOVALLE S.C.A. E.S.P.	COLOMBIA	POWER
MINOTERIE DU CONGO, S.A.	CONGO	MFG

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
MINOTERIE DU CONGO, S.A.	CONGO	MFG
	CONGO, DEM.	
INTERNATIONAL RESCUE COMMITTEE	REPUBLIC OF	SVC
	CONGO, DEM.	
INTERNATIONAL RESCUE COMMITTEE	REPUBLIC OF	SVC
	CONGO, DEM.	
MINOTERIE DE MATADI, S.A.R.L.	REPUBLIC OF	MFG
	CONGO, DEM.	
MINOTERIE DE MATADI, S.A.R.L.	REPUBLIC OF	MFG
	CONGO, DEM.	
MINOTERIE DE MATADI, S.A.R.L.	REPUBLIC OF	MFG
	CONGO, DEM.	
UNKNOWN	REPUBLIC OF	SVC
FOXTROT INTERNATIONAL LDC	COTE DIVOIRE	OIL
FOXTROT INTERNATIONAL LDC	COTE DIVOIRE	OIL
INTERNATIONAL RESCUE COMMITTEE	COTE DIVOIRE	SVC
PROFICIO D.D.	CROATIA	FIN
UNKNOWN	DJIBOUTI	SVC
DOMINICA ELECTRICITY SERVICES LTD. ("DOMLEC")	DOMINICA	POWER
NONE	DOMINICA	SVC
	DOMINICAN	
UNKNOWN	REPUBLIC	SVC
THE ASIA FOUNDATION	EAST TIMOR	SVC
THE ASIA FOUNDATION	EAST TIMOR	SVC
CORPORACION QUIPORT S.A.	ECUADOR	TRAN
CORPORACION QUIPORT S.A.	ECUADOR	TRAN
FUNDACION PARA EL DESARROLLO MICROEMPRESARIAL		
MISION ALIANZA	ECUADOR	FIN
UNKNOWN	ECUADOR	SVC
N/A	EGYPT	OIL
UNKNOWN	EGYPT	SVC
VARIOUS APACHE EGYPT CONCESSION SUBSIDIARIES	EGYPT	OIL
UNKNOWN	EL SALVADOR	SVC
INTERNATIONAL RESCUE COMMITTEE - ADDIS ABABA	ETHIOPIA	SVC
UNKNOWN	ETHIOPIA	SVC
AMERICAN DREAM HOME, S.C.I.	GABON	CONS
INTERNATIONAL RESCUE COMMITTEE	GEORGIA	SVC
JSC MFO CRYSTAL (CRYSTAL)	GEORGIA	FIN
JSC MFO CRYSTAL	GEORGIA	FIN
JSC TBC BANK	GEORGIA	FIN
UNKNOWN	GEORGIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
GHANA HOME LOANS (FUND I) LIMITED	GHANA	FIN
INTERNATIONAL COMMUNITY SCHOOL, LIMITED	GHANA	SVC
MINISTRY OF HEALTH OF GHANA	GHANA	SVC
N/A	GHANA	SVC
WEST AFRICAN GAS PIPELINE COMPANY LIMITED	GHANA	OIL
GRENADA ELECTRICITY SERVICES LIMITED	GRENADA	POWER
FUNDACION PARA EL DESARROLLO EMPRESARIAL Y AGRICOLA	GUATEMALA	FIN
FUNDACION PARA EL DESARROLLO EMPRESARIAL Y AGRICOLA	GUATEMALA	FIN
INTERNATIONAL RESCUE COMMITTEE	HAITI	SVC
LES MOULINS D'HAITI S.E.M (LMH)	HAITI	MFG
LES MOULINS D'HAITI S.E.M. (LMH)	HAITI	MFG
UNKNOWN	HAITI	SVC
AZURE POWER GUJARAT PRIVATE LIMITED	INDIA	MFG
SEP ENERGY INDIA PVT. LTD	INDIA	POWER
SEP ENERGY INDIA PVT. LTD	INDIA	POWER
SEP ENERGY INDIA PVT. LTD.	INDIA	POWER
JL. ADITYAWARMAN	INDONESIA	SVC
JL. ADITYAWARMAN	INDONESIA	SVC
PT TUCAN PUMPCO SERVICES INDONESIA	INDONESIA	OIL
RELIEF INTERNATIONAL BRANCH OFFICE	INDONESIA	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	INDONESIA	SVC
UNKNOWN	INDONESIA	SVC
DAR ES SALAAM INSURANCE COMPANY	IRAQ	TOUR
DAR ES SALAAM INSURANCE COMPANY	IRAQ	TOUR
INTERNATIONAL RESCUE COMMITTEE	IRAQ	SVC
KHUDAIRI TRADING COMPANY LTD.	IRAQ	SVC
DISI WATER PSC	JORDAN	SVC
INTERNATIONAL RESCUE COMMITTEE	JORDAN	SVC
MINISTRY OF MINERAL AND ENERGY RESOURCES (MEMR) OF THE	JORDAN	MFG
N/A	JORDAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	JORDAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	JORDAN	SVC
LIMITED LIABILITY PARTNERSHIP MICROCREDIT ORGANIZATION ARNUR	KAZAKHSTAN	FIN
UNKNOWN	KAZAKHSTAN	SVC
INTERNATIONAL RESCUE COMMITTEE - KENYA	KENYA	SVC
MILANGO FINANCIAL SERVICES LIMITED	KENYA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
N/A	KENYA	SVC
GENWORTH MORTGAGE INSURANCE CORP, KOREA	KOREA (SOUTH)	FIN
THE ASIA FOUNDATION	KOREA (SOUTH)	SVC
THE ASIA FOUNDATION	KOREA (SOUTH)	SVC
UNKNOWN	KOSOVO	SVC
WORLD RELIEF (KNOWN AS BESELIDJHA MICRO FINANCE)	KOSOVO	FIN
WORLD RELIEF (KNOWN AS BESELIDJHA/ZAVET MICRO	KOSOVO	FIN
UNKNOWN	KYRGYZ REPUBLIC	SVC
AMERICAN UNIVERSITY OF BEIRUT	LEBANON	SVC
BANK AUDI SAL-AUDI SARADAR GROUP	LEBANON	FIN
N/A	LEBANON	SVC
N/A	LEBANON	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	LEBANON	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	LEBANON	SVC
UNKNOWN	LEBANON	SVC
LESOTHO FLOUR MILLS LIMITED	LESOTHO	MFG
INTERNATIONAL RESCUE COMMITTEE - MONROVIA	LIBERIA	SVC
KWAPLAH INTERNATIONAL (LIBERIA), INC.	LIBERIA	SVC
KWAPLAH INTERNATIONAL (LIBERIA), INC.	LIBERIA	SVC
RLJ LIBERIA LLC	LIBERIA	TOUR
LMM FARINE, S.A.	MADAGASCAR	MFG
UNKNOWN	MALAWI	SVC
AMERICAN INTERNATIONAL SCHOOL OF BAMAKO	MALI	SVC
FORJADORES DE NEGOCIOS, SA DE CV (FORJADORES)	MEXICO	FIN
WADE RAIN DE MEXICO, S. DE R.L. DE C.V.	MEXICO	SVC
N/A	MOLDOVA	SVC
UNKNOWN	MOLDOVA	SVC
NONE	MONGOLIA	SVC
THE ASIA FOUNDATION	MONGOLIA	SVC
THE ASIA FOUNDATION	MONGOLIA	SVC
N/A	MOROCCO	SVC
N/A	MOZAMBIQUE	SVC
THE ASIA FOUNDATION	NEPAL	SVC
THE ASIA FOUNDATION	NEPAL	SVC
UNKNOWN	NEPAL	SVC
BANCO DE CREDITO CENTROAMERICANO, S.A.	NICARAGUA	FIN
N/A	NICARAGUA	SVC
NONE	NIGER	SVC
AES NIGERIA BARGE LIMITED	NIGERIA	POWER
AMERICAN INTERNATIONAL SCHOOL OF ABUJA	NIGERIA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
AMERICAN INTERNATIONAL SCHOOL OF ABUJA	NIGERIA	SVC
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
CONTOURGLOBAL SOLUTIONS (NIGERIA) LTD.	NIGERIA	POWER
N/A	NIGERIA	SVC
INTERNATIONAL RESCUEE COMMITTEE	PAKISTAN	SVC
NOT APPLICABLE	PAKISTAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	PAKISTAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	PAKISTAN	SVC
THE ASIA FOUNDATION	PAKISTAN	SVC
THE ASIA FOUNDATION	PAKISTAN	SVC
UNKNOWN	PAKISTAN	SVC
UNKNOWN	PANAMA	SVC
N/A	PARAGUAY	SVC
FINANCIERA TFC, S.A.	PERU	FIN
TOTAL ARTEFACTOS S.A.	PERU	SVC
UNKNOWN	PERU	SVC
CE CASECNAN WATER AND ENERGY COMPANY, INC.	PHILIPPINES	POWER
CE CASECNAN WATER AND ENERGY COMPANY, INC.	PHILIPPINES	POWER
CE CASECNAN WATER AND ENERGY COMPANY, INC.	PHILIPPINES	POWER
NATIONAL POWER CORPORATION ("NAPOCOR")	PHILIPPINES	POWER
SEEDFINANCE CORPORATION	PHILIPPINES	FIN
THE ASIA FOUNDATION	PHILIPPINES	SVC
THE ASIA FOUNDATION	PHILIPPINES	SVC
UNKNOWN	PHILIPPINES	SVC
DEVELOPMENT ALTERNATIVES, INC.	RISK	SVC
INTERNATIONAL RESCUE COMMITTEE	RISK	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	RISK	SVC
THE ASIA FOUNDATION	RISK	SVC
INTERNATIONAL RESCUE COMMITTEE	RUSSIA	SVC
MINISTRY OF HEALTH OF SAMARA OBLAST	RUSSIA	SVC
OOO MORGAN STANLEY BANK	RUSSIA	FIN
OPEN JOINT STOCK COMPANY TERMINAL	RUSSIA	CONS
REAL ESTATE DEVELOPMENT GROUP LLC	RUSSIA	SVC
SAMARA OBLAST	RUSSIA	SVC
ZAO "ISP OPTICS, SAINT-PETERSBURG"	RUSSIA	MFG
INTERNATIONAL RESCUE COMMITTEE	RWANDA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
SORWATHE S.A.R.L.	RWANDA	MFG
UNKNOWN	RWANDA	SVC
INTERNATIONAL RESCUE COMMITTEE	SIERRA LEONE	SVC
INTERNATIONAL RESCUE COMMITTEE	SOMALIA	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	SOMALIA	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	SOMALIA	SVC
N/A	SOUTH AFRICA	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	SRI LANKA	SVC
RELIEF INTERNATIONAL BRANCH OFFICES	SRI LANKA	SVC
THE ASIA FOUNDATION	SRI LANKA	SVC
THE ASIA FOUNDATION	SRI LANKA	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	TAJIKISTAN	SVC
RELIEF INTERNATIONAL BRANCH OFFICE	TAJIKISTAN	SVC
UNKNOWN	TAJIKISTAN	SVC
ENTERPRISE HOMES TANZANIA LIMITED, CARE OF ISHENGOMA, MASHA	TANZANIA	CONS
ENTERPRISE HOMES TANZANIA LIMITED, CARE OF ISHENGOMA, MASHA	TANZANIA	CONS
INTERNATIONAL RESCUE COMMITTEE	TANZANIA	SVC
M/S NASHERA LIMITED	TANZANIA	TOUR
MUTUAL VENTURES LIMITED	TANZANIA	CONS
N/A	TANZANIA	SVC
INTERNATIONAL RESCUE COMMITTEE	THAILAND	SVC
THE ASIA FOUNDATION BRANCH OFFICES	THAILAND	SVC
THE ASIA FOUNDATION BRANCH OFFICES	THAILAND	SVC
CONTOURGLOBAL TOGO S.A.	TOGO	POWER
WEST AFRICAN GAS PIPELINE COMPANY LIMITED	TOGO	OIL
ASYA KATILIM BANKASI A.S.	TURKEY	FIN
M/N BUTLER MIMARLAR ARASTIRMA TASARI VE YAPI LTD. STI.	TURKEY	TOUR
M/N BUTLER MIMARLAR ARASTIRMA TASARI VE YAPI LTD. STI.	TURKEY	TOUR
M/N BUTLER MIMARLAR ARASTIRMA TASARI VE YAPI LTD. STI.	TURKEY	TOUR
CAICOS TELEVISION HOLDINGS LTD.	TURKEY	TOUR
INTERNATIONAL RESCUE COMMITTEE - KAMPALA	TURKS & CAICOS ISLANDS	COMM
PEARL MICROFINANCE LIMITED	UGANDA	SVC
PEARLE MICROFINANCE LIMITED	UGANDA	FIN
UGAFODE MICROFINANCE LIMITED	UGANDA	FIN
UNKNOWN	UGANDA	SVC

PROJECT NAME	COUNTRY NAME	SECTOR
INSURANCE		
AMSTED-RAIL LLC	UKRAINE	MFG
CONTOURGLOBAL SOLUTIONS HOLDING COMPANY LLC	UKRAINE	POWER
N/A	UKRAINE	SVC
UNKNOWN	UKRAINE	SVC
BUKHARA MALIKHASI, LLC	UZBEKISTAN	TOUR
KHIVA MALIKASI, LLC	UZBEKISTAN	TOUR
KHIVA MALIKASI, LLC	UZBEKISTAN	TOUR
TASHKENT INTERNATIONAL SCHOOL	UZBEKISTAN	SVC
CONSOLIDADA DE FERRYS, C. A. (CONFERRY)	VENEZUELA	TRAN
CONSOLIDADA DE FERRYS, C. A. (CONFERRY)	VENEZUELA	TRAN
N/A	VIETNAM	SVC
GAZA POWER GENERATING PRIVATE LIMITED COMPANY	WEST BANK & GAZA	POWER
GAZA POWER GENERATING PRIVATE LIMITED COMPANY	WEST BANK & GAZA	POWER
N/A	WEST BANK & GAZA	SVC
RELIEF INTERNATIONAL HEBRON CENTER OF EXCELLENCE	WEST BANK & GAZA	SVC
RELIEF INTERNATIONAL HEBRON CENTER OF EXCELLENCE	WEST BANK & GAZA	SVC
HILL ESTATES LIMITED, P.O. BOX 31617	ZAMBIA	SVC
HILL ESTATES LIMITED, P.O. BOX 31617	ZAMBIA	SVC
N/A	ZAMBIA	SVC
NATIONAL MILLING COMPANY LIMITED	ZAMBIA	MFG
INTERNATIONAL RESCUE COMMITTEE	ZIMBABWE	SVC
FUNDS		
ASIA DEVELOPMENT PARTNERS III, LP	INDIA	FIN
FCP FUND	JORDAN	FIN
ALSIS MEXICO OPPORTUNITIES FUND	MEXICO	FIN
CAPITAL ALLIANCE PROPERTY INVESTMENT CO., LP	NIGERIA	FIN
SAWHF PVE (SA)	SOUTH AFRICA	FIN
SIGMABLEYZER SOUTHEAST EUROPEAN FUND IV	UKRAINE	FIN
ACCELERATOR TECHNOLOGY AND INNOVATION FUND	VARIOUS	FIN
ACF INVESTMENTS B, LTD.	VARIOUS	FIN
ACF INVESTMENTS C, LTD.	VARIOUS	FIN
ACF INVESTMENTS, LTD.	VARIOUS	FIN
ACF INVESTORS, LTD.	VARIOUS	FIN
ACF INVESTORS, LTD.	VARIOUS	FIN
AFRICA TELECOM, MEDIA & TECHNOLOGY FUND LLC	VARIOUS	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
FUNDS		
AL SIS LATIN AMERICA FUND, L.P.	VARIOUS	FIN
AQUA PARTNERS LP	VARIOUS	FIN
ASIA DEVELOPMENT PARTNERS II, L.P.	VARIOUS	FIN
CLEARWATER CAPITAL PARTNERS INVESTMENTSII LP	VARIOUS	FIN
CLEARWATER CAPITAL PARTNERS IV, L.P.	VARIOUS	FIN
DARBY LATIN AMERICAN HOLDINGS, L.P.	VARIOUS	FIN
DARBY-PROBANCO HOLDINGS, L.P.	VARIOUS	FIN
ECP AFRICA FIII INVESTMENTS LLC	VARIOUS	FIN
ECP AFRICA FIII INVESTMENTS LLC	VARIOUS	FIN
ECP AFRICA FUND II INVESTMENTS LLC	VARIOUS	FIN
ECP MENA GROWTH FII LLC	VARIOUS	FIN
ETHOS PRIVATE EQUITY FUND V	VARIOUS	FIN
FONDO ALSIS MEXICO DE VIVIENDA DE INTERES SO	VARIOUS	FIN
GREYLOCK AFRICA OPPORTUNITY FUND I	VARIOUS	FIN
HELIOS INVESTORS II AFRICA, LTD.	VARIOUS	FIN
HELIOS SUB-SAHARAN AFRICA FUND I, L.P.	VARIOUS	FIN
INFRACO SUB-SAHARA INFRASTRUCTURE FUND	VARIOUS	FIN
LATIN POWER III INVESTMENTS, L.P.	VARIOUS	FIN
MEACP CLEAN ENERGY FUND II L.P.	VARIOUS	FIN
PALADIN REALTY LATIN AMERICA INVESTORS II,LP	VARIOUS	FIN
PALADIN REALTY LATIN AMERICA INVESTORS III	VARIOUS	FIN
RUSSIA PARTNERS II "O" SERIES, L.P.	VARIOUS	FIN
SACEF HOLDINGS	VARIOUS	FIN
SOUTHEAST EUROPE EQUITY FUND II, L.P.	VARIOUS	FIN
THE GREAT CIRCLE FUND L.P. (MISF)	VARIOUS	FIN
USRG EMERGING MARKETS FUND, LP	VARIOUS	FIN
VIRGIN GREEN FUND GLOBAL I, L.P.	VARIOUS	FIN
SIRAJ PALESTINE FUND I	WEST BANK & GAZA	FIN

PROJECT NAME	COUNTRY NAME	SECTOR
NON-HONORING SOVEREIGN GUARANTEED		
ISAGEN S.A. E.S.P.	COLOMBIA	POWER
HRVATSKE AUTOCESTE D.O.O.	CROATIA	CONS
ISRAEL ELECTRIC CORPORATION LTD.	ISRAEL	OIL

APPENDIX C – CONVERSIONS AND SOURCES

Below are additional emission factors, conversions, and other factors used in the emission estimates and sources.

Value	Unit of Measure	Source
8,000	Hours per Year	Conservative Operating Assumption – EIA Form 923 data, 2007
333	Days per Year	Calculated from Hours per Year
1,000	kWh per MWh	The Climate Registry, Appendix C
1,000,000	Btu per MMBtu	The Climate Registry, Appendix C
251.98	Btu per cal	Perry's Chemical Engineering Hand Book, Table 1-7
0.001	metric tonnes per kg	The Climate Registry, Appendix C
0.0011023	Short Tons per kg	The Climate Registry, Appendix C
1,000,000	scf per Mcf	The Climate Registry, Appendix C
0.02832	m3 per scf	The Climate Registry, Appendix C
0.9072	metric tonnes per short ton	The Climate Registry, Appendix C
0.000001	metric tonnes per g	The Climate Registry, Appendix C
0.0000011023	short tons per g	The Climate Registry, Appendix C
907.18	kg per short ton	The Climate Registry, Appendix C
2.2046	lbs per kg	The Climate Registry, Appendix C
2204.62	lbs per metric tonne	The Climate Registry, Appendix C
2,000	lbs per short ton	The Climate Registry, Appendix C
42	gallons per barrel	The Climate Registry, Appendix C
53.02	kg CO2 per MMBtu natural gas	The Climate Registry, Table 12.1
73.96	kg CO2 per MMBtu diesel (fuel oil)	The Climate Registry, Table 12.1
93.40	kg CO2 per MMBtu coal (bituminous)	The Climate Registry, Table 12.1
97.02	kg CO2 per MMBtu coal (sub-bituminous)	The Climate Registry, Table 12.1
74.49	kg CO2 per MMBtu crude oil	The Climate Registry, Table 12.1
0.0545	kg CO2 per scf natural gas	The Climate Registry, Table 12.1
75.10	kg CO2 per MMBtu Residual Fuel Oil (#5 & 6)	The Climate Registry, Table 12.1
1028	Btu per scf natural gas	The Climate Registry, Table 12.1
5.796	MMBtu per barrel diesel (fuel oil)	The Climate Registry, Table 12.1
24.93	MMBtu per short ton coal (bituminous)	The Climate Registry, Table 12.1
17.25	MMBtu per short ton coal (sub-bituminous)	The Climate Registry, Table 12.1
5.796	MMBtu per barrel crude oil	The Climate Registry, Table 12.1
893	g CO2 per kWh generated using coal	IFC Guidance Note 3, Annex A section A-(ii)
659	g CO2 per kWh generated using oil	IFC Guidance Note 3, Annex A section A-(ii)
395	g CO2 per kWh generated using natural gas	IFC Guidance Note 3, Annex A section A-(ii)

APPENDIX D – ANNOTATED BIBLIOGRAPHY

American Petroleum Institute (API). Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry. February 2004.

<http://www.api.org/ehs/climate/new/upload/2004_COMPENDIUM.pdf>

Examples from API were used for those projects in Tier B [Accroven SRL, Various Egypt Subsidiaries (Apache), EP Interoil, RPK-Vysotsk (Lukoil II)] for which there were no consumption volumes or other data to base an emissions estimate on. The size of operations for these examples was compared to the size of the projects in Tier B, resulting in a multiplication factor which was applied to the API example's emissions estimate to arrive at an approximate estimate for the Tier B project. Additionally, a methane-fugitive emissions factor for compression, sourced from the API Compendium of Greenhouse Gas Emissions, Table 6-5, was used for the Wilpro Energy Services projects.

California Energy Commission, Electric Power Research Institute. Implementing Advanced Control and Power Technologies to Improve Energy Efficiency and Reduce Operating Costs for U.S. Petroleum Refining and Petrochemical Manufacturing. CEC-500-2006-055. April 2006.

No information was provided in the project description for the Equate Petrochemical facility indicating its size or energy consumption. The average size of petrochemical facilities in the Middle East, of ~850,000 tpy, was sourced from the Oil and Gas Journal. Specific energy requirements and generation sources expected from a petrochemical facility of this size were sourced from the CEC report. This data enabled the qualified estimation of emissions from this facility.

The Climate Registry. General Reporting Protocol Version 1.1. May 2008.

<<http://www.theclimateregistry.org/downloads/GRP.pdf>>

The Climate Registry is the broadest-reaching registry in North America with participation from all Canadian provinces, six Mexican states, and 40 U.S. states. The Climate Registry's General Reporting Protocol is based on the WRI/WBCSD GHG Protocol, the "gold" standard in GHG Accounting and Reporting. Emission, heat content, and conversion factors from this document were used in the analysis (Table 12.1 and Appendix C).

Energy Information Administration (EIA) U.S. Natural Gas Consumption by End Use. 2003-2007.

<http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcunusa.htm>

Emissions from natural pipeline transport are very segment specific, varying by pipeline infrastructure, compression energy source, and segment distance. In order to define the related emissions for representative pipeline hauls in the absence of system specifications, Pace Global assumed pipeline-fuel consumption and both combustion and non-combustion CO_e emissions, based on EIA natural gas consumption data and data from the U.S. GHG Inventory released by EPA in 2008. This data yielded an average fugitive-emission-loss rate of 1.7 percent (per unit volume), and fugitive emissions factor of 4,297 lbs CO₂ per MMscfd. The emissions associated with combustion required to move natural gas was calculated to be 3,439 lbs CO₂ per MMscd.

International Energy Agency. Coal in Indonesia in 2006.

<http://www.iea.org/Textbase/stats/coaldata.asp?COUNTRY_CODE=ID>

The coal profile for Indonesia in 2006 specifies the type of coal consumed and what it was combusted for. The table provided by IEA details the volume of coal used in electricity plants as being 100% sub-bituminous. This information was necessary to calculate the emissions for Paiton Energy as each coal type has a different emissions factor and heat-content value.

International Energy Agency. Coal in Morocco in 2006.

<http://www.iea.org/Textbase/stats/coaldata.asp?COUNTRY_CODE=MA>

The coal profile for Morocco in 2006 specifies the type of coal consumed and what it was combusted for. The table provided by IEA details the volume of coal used in electricity plants as being 100% bituminous. This information was necessary to calculate the emissions for Jorf Lasfar Energy as each coal type has a different emissions factor and heat-content value.

International Finance Corporation (IFC). Guidance Note 3: Pollution Prevention and Abatement. July 31, 2007. <<http://www.ifc.org/ifcext/sustainability.nsf/Content/GuidanceNotes>>

This guidance note by the IFC provides suggested GHG emissions estimation methodologies for the energy and industrial sectors. The table in Annex A provides the capacity for electric-generating technologies (oil = 25MW, coal = 18MW, gas = 41MW) that would emit 100,000 metric tonnes of CO₂e per year. The table also provides the emissions factor that was applied to the electric generation projects for which no throughput or consumption volumes were available.

Nye Thermodynamics Corporation. Gas Turbine Specifications by Manufacturer. Nuovo Pignone turbine specifications.

<<http://www.gas-turbines.com/specs/manuf.htm>>

The project descriptions for Wilpro Energy Services (Pigap) and Wilpro Energy Services (El Furrial) indicate that the compression is driven by Nuovo Pignone Gas Turbines. Pace estimated energy requirements from compression levels depicted for each project and consulted specifications of the appropriately sized Nuovo Pignone gas turbines. Efficiency and other specifications of these turbines were collected from the Nye Thermodynamics Corporation website documenting gas turbine specifications by manufacturer.

Oil and Gas Journal. "Special Report: Worldwide Ethylene Capacity Increases 2 Million TPY in 2007," Volume 106, July 28, 2008.

No information was provided in the project description for the Equate Petrochemical facility indicating its size or energy consumption. The average size of petrochemical facilities in the Middle East, of ~850,000 tpy, was sourced from the Oil and Gas Journal. Specific energy requirements and generation sources expected from a petrochemical facility of this size were sourced from the CEC report. This data enabled the qualified estimation of emissions from this facility.

Trans Alaska Pipeline Environmental Impact Statement Document, Energy Requirements for Conservation Potential. February 15, 2001.

<http://tapseis.anl.gov/documents/docs/Section_4_9_May2.pdf>

Energy-demand factors for crude-pipeline transport were sourced from documents associated with the Environmental Impact Statement for the Trans Alaska Gas pipeline in order to calculate GHG emissions for the Baku-Tblisi-Ceyhan Pipeline.

United States Environmental Protection Agency.(EPA). AP 42: Compilation of Air Pollutant Emission Factors, Volume 1 Stationary Point and Area Sources. “Appendix A: Miscellaneous Data & Conversion Factors”. September 1985. <<http://www.epa.gov/ttn/chief/ap42/>>

Conversion factors not provided by The Climate Registry were obtained from U.S. EPA’s AP 42 document, specifically for the density of natural gas and crude oil and the conversion of kilometers to miles.

United States Environmental Protection Agency (EPA). Inventory of U.S. GHG Emissions and Sinks, 1990-2006. Tables 3-34 and 3-36.

<http://www.epa.gov/climatechange/emissions/downloads/08_CR.pdf>

Emissions from natural-gas-pipeline transport are very segment specific, and vary according to pipeline infrastructure, compression-energy source, and segment distance. In order to define the related emissions for representative pipeline hauls in the absence of system specifications, Pace Global assumed pipeline-fuel consumption and both combustion and non-combustion CO₂e emissions based on EIA natural gas consumption data and data from the U.S. GHG Inventory, released by EPA in 2008. This data yielded an average fugitive emission loss rate of 1.7 percent (per unit volume), and fugitive emissions factor of 4,297 lbs CO₂ per MMscfd. The emissions associated with combustion required to move natural gas was calculated to be 3,439 lbs CO₂ per MMscd.