FICCI

Indian CDM PIPELINE Analysis

An analysis of the portfolio of CDM projects from India

FICCI Team

Rita Roy Choudhury
Senior Director & Head
Environment, Climate Change, Renewable Energy

Vikram Kotru
Assistant Director

Pranav Patel
Assistant Director

Padma Wangmo
Research Associate

FICCI Environment, Climate Change, Renewable Energy Division
Federation of Indian Chambers of Commerce and Industry (FICCI)
FICCI Federation House, Tansen Marg, New Delhi - 110 001
Tel.: +91-11-23738760-70
email: environment@ficci.com

Disclaimer

This report is a result of work done by FICCI. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage and retrieval system, without prior permission in writing from FICCI. FICCI will not accept any liability for loss arising from any use of this document or its content or otherwise arising in connection herewith.

Table of Contents

FOREWORD 03

List of Tables 04

List of Figures 06

A. Introduction 11

B. Overview 13

C. Indian CDM Pipeline: Current Status of Registered and Approved Projects 19

C.1. Approved Projects 22

C.1.1. Geographical Spread of CDM Projects 22

C.1.2. Category Analysis of Approved Projects 25

C.1.3. Sectoral Analysis of Approved Projects 26

C.2. Registered Projects 47

C.2.1. Analysis by Category (Project Type) 47

C.2.2. Sectoral Analysis of Registered Projects 48

C.3. Programme of Activities (PoA) 66

D. Indian Corporate Sector Participation in Indian CDM 70

D.1. Sectoral Distribution of Companies by Project Activity 72

D.2. Top 10 sectors in terms of corporate participation 74

D.3. Sector-Wise Distribution of Companies & Projects Under Each Project Category 77

D.4. Dominant Sectors in terms of corporate participation under seven project categories 80

D.5. Corporate Sector Engagement by Number of Projects per Company 85

D.6. Analysis of Corporate Sector Participation in the Indian CDM Project Pipeline vis-a-vis the Economic Times Top 500 Listing (2012) 91

D.6.1. Sectoral Representation of CDM Projects from Top 500 Listing 93

D.6.2. Analysis of companies in ET Top 50 Listing with CDM Projects 94

D.7. Participation of Public Sector Entities in the Indian CDM Portfolio 96

D.7.1. Public Sector Entities with CDM projects among Top 500 Companies 97

Foreword

FICCI has been continually engaging with carbon market stakeholders, project developers from different industry segments to understand and debate the issues facing them with respect to the carbon market and CDM project development. Over the years, it has engaged with industry and government on both domestic and international levels with an aim of developing and mainstreaming Indian industry's views on CDM. In continuation of this objective, FICCI has in the last few years engaged in developing a report which analyses the total portfolio of projects in the Indian CDM pipeline. FICCI recognizes that market mechanisms are the key instrument industry is eyeing for their future mitigation strategy. Market mechanisms would provide well designed time-efficient and cost effective means to scale up emissions reductions.

List of Tables

Table 1: Number of Registered Projects in each Project Category and total CERs 13

Table 2: Number of Approved Projects in each Project Category and total CERs. 14

Table 3: Comparison of Indian CDM pipeline vis-à-vis World CDM pipeline 15

Table 4: State-wise break-up of the Indian CDM project portfolio 23

Table 5: Break up of top states vis-a-vis top 8 sectors based on number of CDM projects. . . 23

Table 6: Category wise break-up of total approved projects and CERs expected 26
till 2012 (as of June 2012)

Table 7: A sector-wise break-up of approved projects under different project categories . . . 27

Table 8: Category-wise representation of leading sectors in the Indian CDM pipeline. 29

Table 9: Sectoral break-up of approved projects in the top sectors with 30
maximum number of projects in Indian CDM pipeline

Table 10: Sector-wise break-up of projects and expected CERs till 32
2012 in the energy efficiency category as on July 2012

Table 11: Sector-wise break up of projects in the Forestry category as on June 2012 34

Table 12: Sector-wise break-up of projects in the fuel switch category as on June 2012 36

Table 13: Sector-wise break-up of projects and expected CERs till 38
2012 in the industrial process category as on June 2012

Table 14: Sub-category wise break-up of projects and expected CERs till 39
2012 in the industrial process category as on June 2012

Table 15: Sector-wise break-up of projects and expected CERs till 2012 in 41
the municipal solid waste management (MSW) category as on June 2012

Table 16: Sector-wise break-up of projects and expected CERs till 42
2012 in the renewable energy category as on June 2012

Table 17: Project type break-up of Renewable Energy projects 44

Table 18: Sector-wise break up of projects in the 45
Renewable Energy (Biomass) category as on June 2012

Table 19: Category analysis of registered projects (as of June 2012) 47

Table 20: A sector-wise break-up of registered projects under 49
different project categories

Table 21: Category-wise representation of leading sectors in the 51
CDM registered projects from India

Table 22: Sectoral break-up of registered projects in the top sectors with maximum number of registered CDM projects from India 52

Table 23: Sector-wise break-up of registered projects and expected CERs till 2012 in the energy efficiency category as on July 2012 53

Table 24: Sector-wise break-up of registered projects and expected CERs till 2012 in the forestry category as on June 2012 55

Table 25: Sector-wise break-up of registered projects in the fuel switching category as on June 2012 56

Table 26: Sector-wise break-up of registered projects and expected CERs till 2012 in the industrial process category as on June 2012 57

Table 27: Sub-category wise break-up of registered projects and expected CERs till 2012 in the industrial process category as on June 2012 59

Table 28: Sector-wise break-up of registered projects and expected CERs till 2012 in the municipal solid waste management (MSW) category as on June 2012 60

Table 29: Sector-wise break-up of registered projects and expected CERs till 2012 in the renewable biomass category as on June 2012 62

Table 30: Sector-wise break-up of registered projects and expected CERs till 2012 in the renewable energy (RE) category as on June 2012 63

Table 31: Project type break-up of Renewable Energy projects 65

Table 32: Break-up of PoAs based on registration status, organizational status and project categories 69

Table 33: Break up of the companies by sectors 73

Table 34: Sector wise distribution of companies and projects under each project category 77

Table 35: Companies with more than 20 CDM projects 85

Table 36: Companies with 15 to 20 CDM projects 86

Table 37: Companies with 10 to 14 CDM projects 87

Table 38: Companies with 5 to 9 CDM projects 87

Table 39: Total Companies with 2-4 CDM projects in the seven categories 89

Table 40: Number of Companies with only one CDM project in the seven categories 90

Table 41: Break-up of number of companies, sectors, projects in the Indian CDM project pipeline as of June 2012 91

Table 42: List of PSEs in the list of ET Top 500 companies (2012) with the number of CDM projects and estimated CERs 97

List of Figures

Figure 1(a): Percentage contribution of project categories to the total pipeline 25

Figure 1(b): Percentage contribution of project categories to the total expected CERs 26

Figure 2: Sectoral Break-up of approved projects in the top sectors under different CDM project categories 30

Figure 3(a): Sector-wise break-up of approved projects under energy efficiency category 32

Figure 3 (b): Sector-wise break-up of expected CERs upto 2012 from approved projects under energy efficiency category 33

Figure 4(a): Sector wise break up of forestry projects approved as on June 2012 34

Figure 4 (b): Sector wise break up of forestry projects by CER volume till December 2012 as on June 2012 35

Figure 5 (a): Sector-wise break-up of approved fuel switch projects (as of June 2012) 36

Figure 5 (b): Sector-wise break-up of expected CERs upto 2012 from approved fuel switch category (June 2012) 37

Figure 6(a): Sector-wise break-up of approved projects under industrial process category (June 2012) 38

Figure 6 (b): Sector-wise break-up of expected CERs upto 2012 from approved CDM projects under industrial process category (up to June 2012) 39

Figure 6 (c): Sub-sector break-up of number of projects in the industrial process category, as on June 2012 40

Figure 6 (d): Sub-sector break-up of percentage of CERs expected till 2012 from industrial process category, as on June 2012 40

Figure 7 (a): Sector wise break-up of approved MSW based projects (as of June 2012) 41

Figure 7(b): Sector-wise break-up of expected CERs upto 2012 from approved MSW category (June 2012) 42

Figure 8 (a): Sector-wise break-up of renewable energy projects approved (as on June 2012) 43
Figure 8 (b): Sector-wise break-up of expected CERs upto 2012 from approved renewable energy category (June 2012) 43
Figure 8 (c): Project type break-up of renewable energy projects approved (as on June 2012) 44
Figure 8 (d): Project type break-up of renewable energy projects by CER volume till 2012 45
Figure 9(a): Sector-wise break-up of approved projects in renewable biomass category 46
Figure 9(b): Sector-wise break-up of expected CERs upto 2012 from approved projects under renewable biomass category 46
Figure 10 (a): Registered Indian projects: category-wise (June 2012) 47
Figure 10(b): Category-wise break-up of expected CERs upto 2012 from registered projects (June 2012) 48
Figure 11: Sectoral Break-up of registered projects in the leading industry sectors under different CDM project categories 52
Figure 12 (a): Sector-wise break-up of registered projects under energy efficiency category 54
Figure 12(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under energy efficiency category 54
Figure 13(a): Sector-wise break-up of registered projects under forestry category 55
Figure 13(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under forestry category 55
Figure 14(a): Sector-wise break-up of registered fuel switching projects (as of June 2012) 56
Figure 14(b): Sector-wise break-up of expected CERs upto 2012 from registered projects in fuel switch category (June 2012) 57
Figure 15(a): Sector-wise break-up of registered projects under industrial process category (June 2012) 58
Figure 15(b): Sector-wise break-up of expected CERs upto 2012 from registered projects in the industrial process category (June 2012) 58
Figure 15(c): Sub-sector break-up of number of registered projects in the industrial process category as on June 2012 59

Figure 15(d): Sub-sector break-up of percentage of CERs expected till 2012 from the registered projects under the industrial process category as on June 2012 . . . 60
Figure 16(a): Sector wise break-up of registered MSW based projects (as of June 2012) . . . 61
Figure 16(b): Sector-wise break-up of expected CERs upto 2012 from registered MSW projects (June 2012) . . . 61
Figure 17(a): Sector-wise break-up of registered projects under renewable biomass category . . . 62
Figure 17(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under renewable biomass category . . . 63
Figure 18(a): Sector-wise break-up of registered projects under renewable energy category . . . 64
Figure 18(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under renewable energy category . . . 64
Figure 18 (c): Project type break-up of renewable energy projects registered (as on June 2012) . . . 65
Figure18 (d): Project type break-up of registered renewable energy projects by CER volume till 2012 . . . 65
Figure 19: Break-up of PoAs based on registration status . . . 68
Figure 20: Number of companies and projects under each of the seven project categories . . . 71
Figure 21: Percentage of Indian Companies in CDM under the seven categories . . . 72
Figure 22: Top 10 sectors with maximum number of companies with CDM projects . . . 74
Figure 23: Sectors having highest number of Energy Efficiency CDM projects . . . 80
Figure 24: Sectors having highest number of Forestry CDM projects . . . 81
Figure 25: Sectors having highest number of Fuel Switch CDM Projects . . . 81

Figure 26: Sectors having highest number of Industrial Process CDM Projects 82
Figure 27: Sectors having highest number of MSW CDM Projects 83
Figure 28: Sectors having highest number of RE (B) CDM Projects 83
Figure 29: Sectors having highest number of RE CDM Projects 84
Figure 30: Number of companies having multiple projects 85
Figure 31: Break-up of CDM projects from public sector entities 92
Figure 32: Sector-wise break-up of companies in the CDM pipeline from ET Top 500 93
Figure 33: Break-up of sectors and number of companies per sector in ET Top 50 94
Figure 34: Break-up of sectors with CDM projects in ET Top 50 vis-a-vis number of companies 95
Figure 35: Break-up of CDM projects from ET Top 50 companies under 7 project categories 95
Figure 36: Number of PSEs in the seven project categories with number of project 96

A Introduction

Indian industry has successfully demonstrated its commitment to greenhouse gas mitigation and has taken up various initiatives to ensure that their operations are less carbon intensive. Market based mechanisms such as the Clean Development Mechanism (CDM) have provided a major impetus to industry to engage in mitigation initiatives and mobilized the interest of corporates and technology providers towards enhancing their focus on energy efficiency and renewable energy technologies. The most significant achievement of CDM is that it has made the industry realize the need and potential for emissions reductions that exist across all sectors of the economy and has also geared them up to take concrete measures through adoption of clean technologies and GHG mitigation initiatives.

The diversity of projects under the Clean Development Mechanism portrays the strong indication of the multitude of initiatives for greenhouse gas mitigation that Indian businesses and industry have embarked upon. The Indian Designated National Authority (DNA) has categorized Indian CDM projects into 7 broad categories, namely: Energy Efficiency, Fuel Switch, Forestry, Industrial Process, Municipal Solid Waste, Renewable Energy, and Renewable Energy (Biomass).

For purposes of this analysis, we have looked at the entire set of projects that have been approved by the Indian DNA as "approved" (host country approval) and the subset of projects from India that have been "registered" (by CDM Executive Board). The analysis is based on data available with Indian DNA of total number of projects from India as on June 2012 (referred here as the total portfolio of Indian CDM projects). It is important to analyze the registered and the approved set of projects separately to show the success rate of Indian projects when these go through the international approval phase (in this case with the CDM Executive Board or CDM EB as it is called) vis-à-vis the domestic approval of a larger set of projects, many of which have remained in the validation pipeline (the stage before the project goes for international registration). This also helps to know the sheer numbers that do not make it in the final stage of CDM but still have the merit of emissions reduction potential and contribution to sustainable development domestically.

An analysis of the projects as on June 2012 shows that 2355 projects with a certified emission reduction (CER) potential of 715 million have been approved by the Indian DNA. Out of this

total, 844 Indian projects (one-third of total Indian approved and 16.8% of global total registered) have been registered by the CDM Executive Board. The expected CERs from these 844 projects are 330 million upto December 2012.

India has witnessed a steady rise in the number of CDM projects over the years. This rise is seen from 1633 projects in April 2010 to a total of 2355 in June 2012. There has been an increase of 722 projects in this time period. The fact that 2355 CDM projects have been approved by the Indian DNA by June 2012 clearly shows that the Indian CDM portfolio grew rapidly.

Carbon markets and market based mechanisms play an important role in engaging business and industry effectively in climate change mitigation. The long term climate change regime must therefore institutionalize market based mechanisms and provide incentive for carbon markets to grow and for project developers and investors to have a long term regulatory signal to engage in carbon markets. For India, CDM has resulted in positive action, collaboration and innovation and has played a significant role in drawing Indian industry towards a spate of measures and initiatives on greenhouse gas emissions reduction.

B Overview

This chapter provides an overview of the current scenario of CDM projects in India. The overview includes an analysis of registered projects (as of June 2012) as well as the total portfolio of projects (total approved by the Indian government as of June 2012). The chapter presents a break-up of projects in terms of the CDM project categories, as defined by the Indian Designated National Authority. The categories are renewable energy (wind, hydro, solar); renewable (biomass); industrial process; fuel-switch; energy efficiency; municipal solid waste and forestry. The renewable energy category includes wind, hydro and solar projects. Biomass projects have been categorized separately under renewable (biomass) category.

For the purpose of presenting this analysis, the sections ahead have been presented as separate analysis of registered and approved projects. In the case of registered projects (see Table 1 below), 844 Indian projects (16.8% of global total) have been registered by the CDM Executive Board as on June 2012. The expected CERs from these 844 projects are 330 million upto December 2012. The categories with highest number of registered projects include renewable energy (379), renewable biomass (209) and energy efficiency (182). In terms of expected CERs, industrial process, renewable energy, and energy efficiency are the top categories. Maximum number of projects have been registered from the wind sector (264) followed by the conventional power (110) and hydro sectors (94).

Table 1: Number of Registered Projects in each Project Category and total CERs

Category	Number of Registered Projects	Certified Emissions Reductions (CERs) expected till Dec 2012 (in millions)
Renewable Energy	379	80.37
Renewable (Biomass)	209	50.57
Energy Efficiency	182	79.13
Industrial Process	32	94.17
Fuel Switch	23	15.70
MSW	15	3.62
Forestry	4	7.07
Total	844	330.63

In the case of approved projects (see Table 2 below), 2355 projects (with a total CER potential of 715 million) have been approved by the Indian DNA upto June 2012. These projects represent a large sectoral coverage of 55 sectors. The geographical spread of projects shows that these 2355 CDM projects are spread over 28 states in India with the highest number of projects being in Tamil Nadu (304), Maharashtra (294) and Gujarat (279). One project is a trans-boundary project with Bhutan.

Table 2: Number of Approved Projects in each Project Category and total CERs

Category	Number of Approved Projects	Total expected CERs upto 2012 (in million)
Renewable Energy	980	146.0
Energy Efficiency	655	264.1
Renewable (Biomass)	473	95.9
Fuel Switch	106	66.7
Industrial Process	84	120.0
MSW	42	11.6
Forestry	15	10.7
Total	2355	715.2

An analysis of approved projects by category (Project Type) shows that the Indian project portfolio is presently dominated by renewable energy, renewable (biomass), and energy efficiency projects. Energy Efficiency category has the maximum sectoral representation (40 sectors) with Iron & Steel having the highest number of projects (182) under this category followed by power* (71) and lighting (61). Under the renewable biomass category, power sector (power generation from biomass) has the highest number of projects (153), followed by sugar (101). Under the renewable energy category, wind projects (668) clearly dominate the scene.

The total approved projects in the Indian CDM pipeline also consist of 12 Programme of Activities (PoAs). The 12 PoAs are registered by separate Coordinating/Managing Entities (CMEs) with one of the PoAs consisting of 17 CDM Project Activities (CPAs). All the 12 PoAs including the one with 17 CPAs mentioned in the CDM portfolio are a part of the total approved CDM project pipeline. Out of the total 12 PoAs, 4 were registered until August 2012 by the CDM EB.

An analysis by company (corporate participation) in the approved projects shows that 1604 companies from India (representing 55 sectors) account for 2355 projects in the Indian CDM project pipeline (as of June 2012). Out of the total 1604 companies, 83 are public sector entities (public sector units or PSUs) which account for 210 projects (9% of total projects). The expected CERs from these 210 projects is 98.32 million upto 2012, rest 1521 private companies would generate 616.88 million CERs upto 2012. Out of the top 500 companies featuring in the Economic Times (ET) ranking for 2012, 171 corporates (11% of the total 1604 companies) are engaged in CDM which in total account for 449 projects in the Indian project portfolio (19% of the total 2355 approved projects). These 171 companies come from a total of 33 sectors. Out of the total 83 PSUs engaged in CDM, 18 feature in the ET top 500. Of the top 50 in the ET list, nearly half (23 companies) have CDM projects in the total portfolio of 2355 projects. These companies represent sectors such as oil & gas, petrochemicals, iron & steel, automobile, metals, power, pulp & paper, FMCG, chemicals, cement, and wind. These 23 companies from ET top 50 together account for 136 CDM projects, of which 46 are registered with the UNFCCC.

Table 3: Comparison of Indian CDM pipeline vis-à-vis World CDM pipeline

India vis-à-vis World (as on June 2012)		
	India	World
Pipeline (Validation stage)	1009 (42.9%)	2350
Number of Registered Projects	844 (16.8%)	5014
Expected CERs from Registered Projects (in million)	330 (31.0%)	1063

A comparison of the Indian CDM pipeline vis-à-vis World CDM pipeline shows that 42.9% of projects under validation stage are from India. However, India accounts for only 16.8% of the registered projects in the world while accounting for close to 1/3rd of the CERs from total registered projects in the World. This shows that while the proportion of registered projects from India in the total registered projects is small, these projects account for a large proportion of the global total CERs (almost one-third) of total world registered projects.

Snapshot

Analysis of Approved Projects

- Indian CDM pipeline has 2355 projects as of June 2012. Renewable energy has the highest number of projects (980) followed by energy efficiency (655) and renewable biomass (473).
- In the Energy Efficiency (655) category, the maximum number of projects belong to the iron & steel (182), power (71), lighting (61) and cement (49) sectors . In terms of expected CERs from this category (264.1 million), the iron & steel sector again leads (95.58 million) followed by power (73.8 million) sector.
- In the Forestry (15) category, the forestry sector accounts for maximum number of projects (14). This sector accounts for 8.4 million CERs of the total 10.7 million CERs in the forestry category
- In the Fuel Switch (106) category, the maximum number of projects belong to power (19) followed by chemicals (16), ceramics and tile (16) sectors. In terms of expected CERs till 2012 from this category (66.7 million), the power sector (50 million) dominates.
- In the Industrial Process (84) category, the maximum numbers of projects approved belong to the oil and gas sector (14) followed by the pulp & paper industry (11), chemicals (9), fertilizers (8) and distillery (8). In terms of expected CERs till 2012 from this category (120 million), the chemical sector dominates the pie with over 82 million CER potential.
- The Municipal Solid Waste (42) category is dominated by Waste to Energy projects with a total of 18 projects. Waste to Energy projects are followed by 15 composting projects under this category. In terms of expected CERs till 2012 from this category (11.6 million),waste management sector alone commands around 10 million CER potential.
- Under the Renewable Energy (980) category, 668 projects are from the wind sector alone commanding more than 74 million CER potential upto 2012. The other prominent player in this category is the Hydro (221) which accounts for 67 million CERs. The total expected CERs from this category are 146 million.
- In the Renewable Energy Biomass (473) category, power is the most dominant sector (153) followed by sugar (101) and agro industry (38). In terms of expected CERs till 2012, the power and sugar sectors contribute 30.74 and 30.05 million CERs respectively of the total 95.9 million CERs from this category.

Analysis of Registered Project

- As of June 2012, there were a total of 844 CDM projects registered with the CDM EB. The highest numbers of registered projects are from renewable energy (379) and renewable biomass (209) categories, closely followed by energy efficiency category (182).
- In the energy efficiency category the dominant sectors are iron & steel (42), cement (20), power (19) and oil & gas (15). The maximum expected CERs are from the Iron & Steel (31.1 million), Power (15.1 million) and Cement (11.93 million) sectors respectively.
- The forestry sector has only 4 projects these projects are related to afforestation, reforestation and rehabilitation of degraded wasteland. The total expected CERs from these projects are around 7 million.
- In the fuel switch category, the maximum numbers of projects belong to the power sector (5) followed by the chemicals (4) and fertilizers (4) sectors. The power sector dominates the pie with over 9 million CER potential.
- In the industrial process category, the maximum numbers of projects belong to the chemicals (7) and the fertilizers (7) sectors followed by pulp & paper (6). The chemical sector dominates the pie with over 82 million CER potential.
- In the Municipal Solid Waste Management category (MSW), out of the total 15 projects, 13 are from the waste management sector alone. The waste management sector dominates the pie with over 3 million CERs.
- In the renewable (biomass) category, maximum numbers of projects are registered under the power (85), sugar (37), agro industry (21) and textiles (18) sectors respectively. In terms of expected CERs the power (21.5 million) and sugar (13.4 million) sectors lead.

Analysis by Company

- 1604 Indian companies (representing 55 sectors) account for 2355 projects in the Indian CDM project portfolio (as of June 2012)
- Out of the total 1604 companies, 83 are public sector entities which account for 210 projects (9% of total projects). The expected CERs from these 210 projects are 98.32 million upto 2012.

- Out of the top 500 companies featuring in ET ranking for 2012, 171 corporates (11% of the total 1604 companies) are engaged in CDM which in total account for 438 projects in the Indian project portfolio.
- 171 companies engaged in CDM in India out of the ET 500 represent a total of 33 industrial sectors.
- Out of the total 83 public sector entities engaged in CDM, 18 feature in the ET top 500
- Of the top 50 in the ET list, 23 companies have CDM projects in the current portfolio. These companies represent sectors such as oil & gas/petrochemicals, iron & steel, automobile, metals, power, pulp & paper, FMCG, chemicals, cement, wind.
- These 23 companies from ET top 50 together account for 136 CDM projects, of which 46 are registered with the UNFCCC.

C Indian CDM Portfolio:
Current Status of Registered and Approved Projects

India continues to lead in the second spot with respect to CDM projects in the world. The approval of CDM projects from India has increased continuously. Since November 2011 when total approved projects were 2123, the number of approved projects in India till June 2012 went up to 2355, an increase of almost 11 %. This shows that projects from India have continued to enter the CDM pipeline. Until November 2011 there were 831 projects under renewable energy, 620 projects under energy efficiency, 437 projects under renewable biomass, 99 projects under fuel switch, 82 projects under industrial process, 41 projects under MSW and 13 projects under forestry. By June 2012 the number of approved projects under each of these categories was - 980 projects (renewable energy), 655 projects (energy efficiency), 473 projects (renewable biomass), 106 projects (fuel switch), 84 projects (industrial process), 42 projects (MSW) and 15 projects (forestry).

The fact that 2355 CDM projects have been approved by the Indian Designated National Authority (DNA) by June 2012 clearly shows that the Indian CDM portfolio grew significantly despite the uncertainty regarding the post 2012 period. Out of these projects, 844 have been registered by the CDM Executive Board. The registered projects account for 36% of the total approved projects in the Indian CDM pipeline. The registered projects have already resulted in over 330 million Certified Emissions Reductions (CERs) and directed investment in renewable energy and energy efficiency projects and technologies. There has been a spurt in the number of approved wind projects and consequently the number of projects in the renewable energy category. Wind projects have not only been initiated by power sector companies but also by sectors such as cement, chemicals, agro industry, fertilisers, etc.

Definitions /Classifications

1. The term 'category' in this chapter denotes the seven CDM project categories (project type) as defined by the Indian Designated National Authority (DNA). The seven project categories are: energy efficiency (EE), forestry (F), fuel switching (FS), industrial process (IP), municipal solid waste (MSW), renewable energy (RE), renewable energy biomass (RE (B)).

2. The word 'approved project' denotes project which has been approved by the host country government (Indian DNA) but not yet registered by the UNFCCC.

3. The term 'registered project' denotes project which has been approved by the CDM Executive Board (after host country approval and validation by DOEs). After a project gets registered at the CDM EB, it becomes a CDM project. All registered projects are approved projects but all approved projects may not get registered.

4. The term 'pipeline' in the international context refers to all those projects which are currently under validation process of UNFCCC and are yet to be registered while the term 'portfolio' used in our analysis refers to all the projects which have been approved by the Indian DNA. The portfolio of Indian CDM projects refers to the total number of projects from India that have engaged in the CDM process. Since this report presents an analysis of all the approved projects in India, the terms pipeline and portfolio have been used interchangeably and refer to the total approved projects in India.

5. Designated National Authority (DNA) denotes the organization granted responsibility by a Party to authorise and approve participation in CDM projects. Its main task is to assess potential CDM projects to determine whether they will assist the host country in achieving its sustainable development goals, and to provide a letter of approval to project participants in CDM projects. In India the Ministry of Environment and Forests (MoEF), Government of India is the DNA.

6. Throughout this chapter, 'sector' denotes the sector of the project activity (the sector where the project is actually taking place and which is claiming the CERs generated) and not necessarily the project proponent sector (sector which is investing in the project). For example, if a cement company proposes a MSW project or a chemicals company proposes a wind project, the project would be considered under MSW and wind sectors, respectively, and not under cement or chemicals sector. Another example would be a wind project set up by a textile company. If the wind project has been set up for captive consumption, then the project will be considered under textiles sector but if the wind project is grid connected and not used for captive power consumption then the project is considered under wind sector. There are many such projects proposed by hospitality sector, chemicals, pulp & paper industry etc. If the projects have been set up for captive consumption only then they are considered under their respective proponent sectors but if they do not use it for captive consumption and supply power to grid then they are counted under wind sector.

7. All projects related to grid connected power generation (from thermal power plants, natural gas based power generation and biomass/biogas based power generation) have been considered under power* sector and not the respective sector carrying out the project. For example, there are many projects by iron & steel, sugar and waste management companies, generating power and supplying it to the grid, these projects have been counted under power* sector and not their respective proponent sectors.

8. All hydro power projects have been counted under hydro sector irrespective of the sector the proponent company belongs.

9. The renewable energy projects have been divided under two categories viz. Renewable Energy (RE) and Renewable Biomass. While all wind, solar and hydro projects are counted under renewable energy category, all biomass and biogas based projects are counted under RE(Biomass) category. The overall number of renewable projects is the total of the projects under renewable energy and renewable biomass project categories.

10. The coordinating/managing entity (CME) is defined as: "An entity authorized by all participating host country DNAs involved in a particular PoA and nominated in the MoC statement as the entity that communicates with the Board and the Secretariat, including on matters relating to the distribution of CERs, tCERs or lCERs, as applicable." The CME is responsible for proposing and overseeing the implementation of the Programme of Activities (PoA).

11. A Component Project Activity (CPA) is defined as "A single measure, or a set of interrelated measures under a PoA, to reduce GHG emissions by sources or result in net anthropogenic GHG removals by sinks, applied within a designated area defined in the baseline methodology (ies)."

12. All projects pertaining to afforestation, reforestation, restoration of degraded wasteland, plantation initiatives have been counted under a separate sector titled 'forestry' and are classified under the forestry category.

C.1. Approved Projects

India has been one of the success stories of CDM with Indian project portfolio representing a significant component of the global CDM project basket. With 2355 projects (with a CER potential of 715 million by 2012) approved by the Indian DNA upto June 2012 and engagement of 55 sectors in CDM, India continues to have the most diverse portfolio of CDM projects in the world.

India's heavy dependence on fossil fuels, existence of a huge small and medium enterprises sector, and fast-paced growth provides the country with an excellent opportunity to generate large volumes of carbon credits from energy efficiency and clean energy projects. Industry has realised that adopting modern low-carbon intensive technologies and processes and clean sources of energy is an imperative for mitigating the adverse effects of climate change. Indian industry has shown a tremendous proactive attitude to addressing climate change through diverse mitigation initiatives.

C.1.1. Geographical Spread of CDM Projects

FICCI's analysis of the total Indian CDM project portfolio (upto June 2012) shows that CDM projects are spread over 28 states besides 142 projects which are in more than one state (multi-state projects) and one trans-boundary project with Bhutan. The maximum numbers of projects are in Tamil Nadu (304), Maharashtra (294), Gujarat (279), Karnataka (223) and Andhra Pradesh (176), which is as expected because of the large concentration of industries in these states. The least number of projects are in the states of Meghalaya (4), Goa (3), Arunachal Pradesh (1) and Tripura (1). There are CDM projects in the Union Territories of Andaman & Nicobar (1) and Pondicherry (2) as well. Wind projects account for a majority of projects in Tamil Nadu (196), Maharashtra (111), Gujarat (100) and Karnataka (74). Even in the case of multi-state projects, wind projects account for 77 of the total 142 projects. In Andhra Pradesh which has a total of 176 approved projects, there are only 5 wind projects while power sector accounts for a majority of the projects (52) in the state.

Table 4: State-wise break-up of the Indian CDM project portfolio

State	Number of Projects	State	Number of Projects
Tamil Nadu	304	Haryana	29
Maharashtra	294	Kerala	17
Gujarat	279	Delhi	14
Karnataka	223	Assam	12
Andhra Pradesh	176	Bihar	8
Rajasthan	160	Sikkim	7
Uttar Pradesh	153	Jammu & Kashmir	6
Chhattisgarh	99	Meghalaya	4
Himachal Pradesh	78	Goa	3
Orissa	73	Pondicherry	2
Punjab	67	Andaman & Nicobar	1
West Bengal	66	Arunachal Pradesh	1
Madhya Pradesh	60	Tripura	1
Uttaranchal	44	Multi State	142
Jharkhand	31	Total *	2354

Note - There is one trans-boundary project with Bhutan that is not included in the above table.*

Table 5: Break up of top states vis-a-vis top 8 sectors based on number of CDM projects

State	Sector	Number of Projects
Tamil Nadu	Wind	196
Maharashtra		111
Gujarat		100
Others		261
Total		668
Andhra Pradesh	Power	52
Chhattisgarh		27
Multi State		25
Others		144
Total		248

State	Sector	Number of Projects
Himachal Pradesh	Hydro	69
Karnataka		42
Uttaranchal		24
Others		86
Total		221
Chhattisgarh	Iron & Steel	41
Orissa		33
Jharkhand		25
Others		95
Total		194
Uttar Pradesh	Sugar	45
Maharashtra		22
Karnataka		17
Others		31
Total		115
Gujarat	Chemicals	24
Tamil Nadu		10
Maharashtra		8
Others		26
Total		68
Andhra Pradesh	Pulp & Paper	16
Uttar Pradesh		13
Punjab		9
Others		26
Total		64
Gujarat	Textiles	21
Punjab		9
Tamil Nadu		8
Others		25
Total		63

C.1.2. Category Analysis of Approved Projects

This section gives a detailed category-wise (CDM project type) break-up and analysis of the total Indian CDM portfolio of 2355 projects as of June 2012. CDM projects are categorized into 7 types of projects as listed in the table below.

Table 6: Category wise break-up of total approved projects and CERs expected till 2012 (as of June 2012)

Category	Number of Projects	Total expected CERs upto 2012 (in million)
Renewable Energy	980	146.0
Energy Efficiency	655	264.1
Renewable (Biomass)	473	95.9
Fuel Switch	106	66.7
Industrial Process	84	120.0
MSW	42	11.6
Forestry	15	10.7
Total	2355	715.2

Figure 1(a): Percentage contribution of project categories to the total pipeline

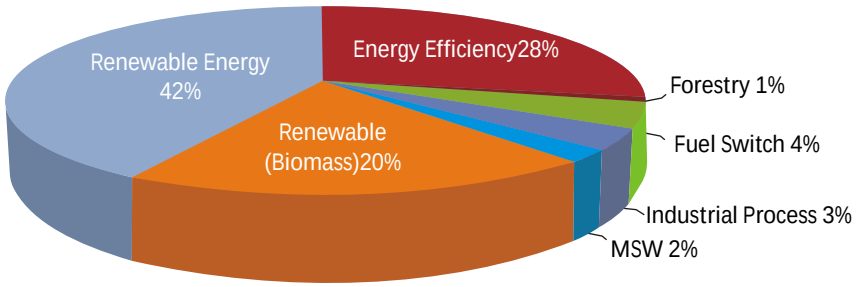
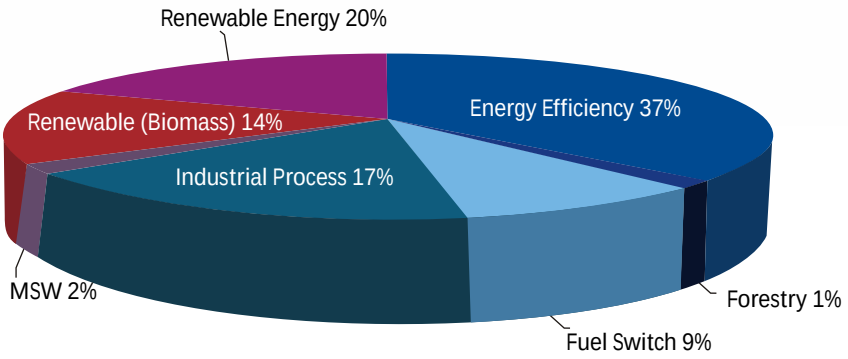


Table 6 illustrates that the Indian project portfolio is dominated by renewable energy (980), energy efficiency (655) and renewable biomass (473) projects. The MSW and forestry categories with 42 and 15 projects respectively still remain largely untapped project categories.

Figure 1(b): Percentage contribution of project categories to the total expected CERs



From 1(b) and table 6, it is evident that in terms of CER volume expected till 2012, energy efficiency category has the highest potential with around 264 million CERs (37%) followed by the renewable energy category with over 146 million CERs (20%) expected upto 2012, though the number of projects under renewable energy is substantially higher than the energy efficiency category. While renewable energy projects account for the highest number of projects in the Indian pipeline, energy efficiency projects top the list in terms of expected CERs.

C.1.3. Sectoral Analysis of Approved Projects

This section presents an elaborate sector-wise break-up of the Indian CDM pipeline for 2355 projects as on June 2012 under different CDM categories. A comparative study of the approved vis-a-vis registered projects in major industry sectors has also been presented. Table 7 represents a comprehensive sector-wise break-up of the Indian pipeline as of June 2012. The table clearly illustrates that besides the renewable energy sector (hydro, wind, solar) the other key sectors include power (248); iron & steel (194); sugar (115); chemicals (68); pulp &paper (64) and lighting (62). Sectors like automobile, buildings, fertilisers, petrochemicals, metals also have significant CDM project potential.

Table 7: A sector-wise break-up of approved projects under different project categories

CDM Project Category								
Sector by Project Activity	Energy Efficiency (EE)	Forestry	Fuel Switch (FS)	Industrial Process (IP)	Municipal Solid Waste (MSW)	Renewable (Biomass) (REB)	Renewable Energy (RE)	Total
	A	B	C	D	E	F	G	H
Agriculture	4							4
Agro Industry	3	1		5		38	3	50
Aluminium	6					1		7
Animal Feed						1		1
Asbestos						2		2
Automobile*	9		1				3	13
Brick	15							15
Buildings	32						1	33
Carbon Black	11							11
Cement	49		7			1	2	59
Ceramics & Tiles	3		16			3	2	24
Chemicals	28		16	9		11	4	68
Cleantech	1					2		3
Community	20		1			13		34
Cosmetics						1		1
Dairy						2		2
Distillery	4			8		15		27
Diversified	2		3			3	1	9
Electronics	4		5					9
Fertilisers	17		6	8	1	3	4	39
FMCG	1		1	2		1	1	6
Food processing			3	4		23	1	31
Forestry		14						14
Glass	5		2					7
Graphite	1							1
Gypsum	1							1
Health Care						1		1
Hydro							221	221
Industrial Gases	1							1
Infrastructure	4					1		5
Iron and Steel	182		4	2		6		194

Sector by Project Activity	Energy Efficiency (EE)	Forestry	Fuel Switch (FS)	Industrial Process (IP)	Municipal Solid Waste (MSW)	Renewable (Biomass) (REB)	Renewable Energy (RE)	Total
	A	B	C	D	E	F	G	H
Lighting	61		1					62
Livestock						3		3
Metal	5		1	4		1	2	13
Mining	1			1			3	5
Oil & Gas	30		2	14		1		47
Petrochemicals	13		2	2		4		21
Pharmaceuticals	6		3			8	2	19
Polymers	2					1		3
Power*	71		19	2	3	153		248
Pulp & Paper	23		2	11		28		64
Refractory	1		1					2
Renewable - All							1	1
Rubber			1	1		1		3
Silica			1					1
Solar							53	53
Sugar	7			7		101		115
Synthetics	4					3		7
Telecom	1							1
Textiles	15		7			33	8	63
Transport	7		1			1		9
Tyres	3					2		5
Waste Management				4	38	3		45
Water	2							2
Wind							668	668
Wood						2		2
Grand Total	655	15	106	84	42	473	980	2355

(Note: Community is not a sector by definition, but it includes projects proposed by NGOs, community organizations and institutions like village committees, etc., which cannot be included under any other sector. The Waste Management sector comprises projects by private sector companies as well municipal and urban local bodies. The Power sector consists of thermal, natural gas and biomass/biogas based power generation projects. 'Water' consists of Municipal water energy efficiency and desalination plant projects. The Automobile sector consists of all projects related to automobile and its ancillary industries like steering, gears and other automobile components. Iron and Steel * sector consists of all types of crude steel and finished steel products manufacturing projects like steel pipes and steel rings. 'Wind' is classified as all wind power projects supplying power to the grid whereas captive wind power projects have been included under the respective sectors undertaking these projects under the renewable energy project category.)

The table above depicts the sector-wise break-up of registered projects under different CDM categories. Though diverse portfolios of projects have been implemented across diverse sectors, the potential for CDM in these sectors remains highly untapped. With 40 sectors having proposed projects in the EE category (Column A), EE continues to have the most diverse sectoral representation. Some of the leading sectors under the EE category are iron & steel (182), power (71), lighting (61) and cement (49). Renewable Biomass (Column F) is the sector with the second highest sectoral coverage with projects from 35 sectors. Power (153), Sugar (101) and Agro Industry (38) account for maximum projects in the renewable biomass category.

In terms of total number of projects, the Renewable Energy sector (Column G) clearly leads with 980 projects followed by Energy Efficiency (655), Renewable Biomass (473), Fuel Switch (106), Industrial Process (84), MSW (42) and Forestry (15). While the total number of wind projects is denoted as 668, other sectors such as agro industry, automobiles, buildings, cement, chemicals, etc. have also implemented wind projects for captive power consumption.

Table 8: Category-wise representation of leading sectors in the Indian CDM pipeline

	Energy Efficiency	Forestry	Fuel Switch	Industrial Process	MSW	Renewable Biomass	Renewable Energy
Top Sectors	Iron & Steel, Lighting, Power, Cement	Community	Power, Ceramics and Tiles, Chemicals	Oil & Gas, Pulp & Paper	Waste Management	Power, Sugar, Agro Industry, Textiles	Wind, Hydro, Solar

Note: The table above depicts only the top sectors in terms of number of projects under each category and not the entire list of sectors with CDM projects under every category.

Table 8 depicts a category wise representation of the top sectors in the Indian CDM pipeline (in terms of number of projects). These are the sectors which have the maximum number of projects under the respective project categories.

Figure 2: Sectoral Break-up of approved projects in the top sectors under different CDM project categories

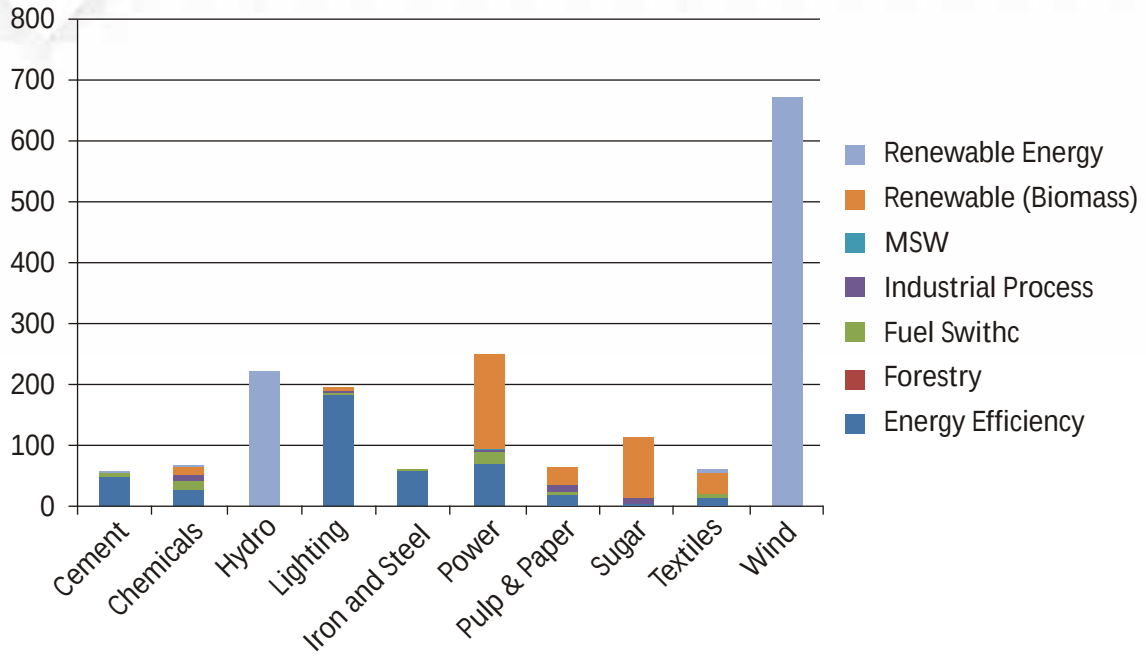


Table 9: Sectoral break-up of approved projects in the top sectors with maximum number of projects in Indian CDM pipeline

	Energy Efficiency	Forestry	Fuel Switch	Industrial Process	MSW	Renewable (Biomass)	Renewable Energy	Grand Total
Cement	49		7			1	2	59
Chemicals	28		16	9		11	4	68
Hydro							221	221
Iron and Steel	182		4	2		6		194
Lighting	61		1					62
Power *	71		19	2	3	153		248
Pulp & Paper	23		2	11		28		64
Sugar	7			7		101		115
Textiles	15		7			33	8	63
Wind							668	668
Grand Total	436		56	31	3	333	903	1762

Figure 2 and Table 9 represent a sectoral break-up of the approved projects under each CDM category from the leading sectors of the Indian CDM pipeline. As evident from Table 9, energy efficiency category has the maximum sectoral representation (8) with almost all the relevant industry sectors having projects under this category. While Iron & Steel and power sectors account for a major chunk of projects under this category, the lighting sector has recently overtaken the cement sector in terms of number of projects under this category. The next dominant categories with respect to sectoral participation are Renewable (Biomass) and Fuel Switch with 7 major industry sectors in each category. Renewable (Biomass) however has more projects (333) as is evident from the table. The power (power from biomass) and sugar sectors dominate the vast majority of projects under this category with 153 biomass projects from power sector and 101 projects from sugar sector. Wind and hydro sectors clearly dominate the renewable energy category with 668 and 221 projects, respectively. In the fuel switch category, ceramics and tiles sector (not represented in the table above) and chemicals sector have 16 projects each while the power sector still leads in this category with 19 projects. Projects initiated by these highly energy intensive sectors have led to a reduction in their fossil fuel consumption. Under Industrial Process, the oil and gas sector (not represented in the table above) accounts for bulk of the projects (14) followed by pulp and paper (11). Majority of the projects in the oil & gas sector are related to gas flaring and process modification.

The MSW category with a total of 42 projects has maximum number of projects undertaken by waste management sector (not represented in table above) with 38 projects.

Analysis by Category

Energy Efficiency

This section presents an analysis of CDM projects from the energy efficiency category. The dominant sectors under energy efficiency are iron & steel, lighting, power, cement, buildings, oil & gas.

Table 10: Sector-wise break-up of projects and expected CERs till 2012 in the energy efficiency category as on July 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects	Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects
Iron & Steel	182	95.58	Pulp & Paper	23	3.72
Power *	71	73.84	Community	20	1.43
Lighting	61	12.38	Fertilisers	17	5.60
Cement	49	21.63	Textiles	15	2.29
Buildings	32	2.02	Brick	15	3.57
Oil & Gas	30	23.72	Petrochemicals	13	1.85
Chemicals	28	2.71	Others	99	13.76

The Power sector consists of thermal, natural gas and biomass/biogas based power generation projects. 'Others' consist of all sectors with less than 13 projects. There are in all 27 sectors which have less than 13 projects in energy efficiency all of which have been included under 'Others' in the table above. That makes it total 40 sectors which have energy efficiency projects.*

Figure 3(a): Sector-wise break-up of approved projects under energy efficiency category

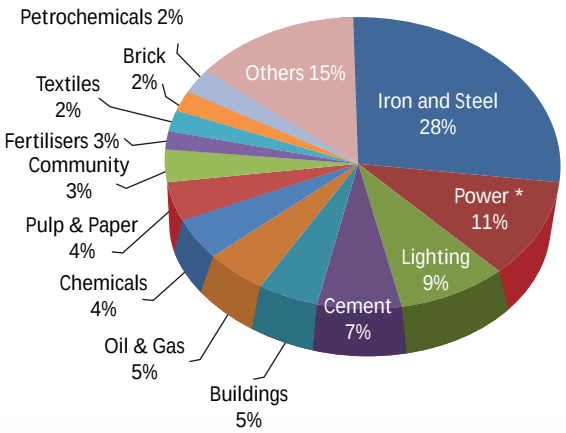


Figure 3 (b): Sector-wise break-up of expected CERs upto 2012 from approved projects under energy efficiency category

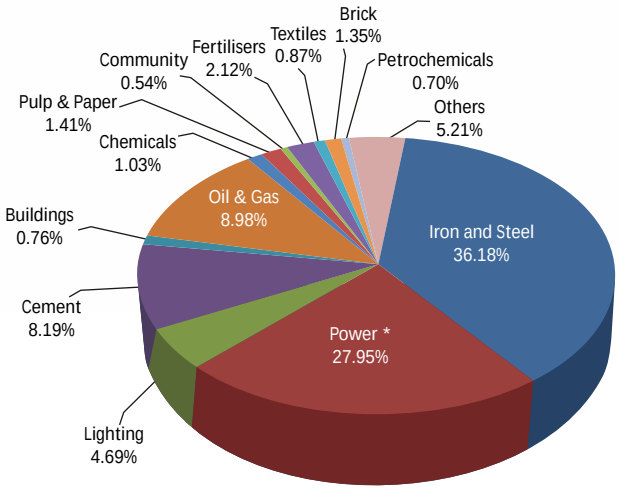


Figure 3: A representation of approved projects in the energy efficiency category

Figure 3(a) gives a sector-wise break-up of approved projects in the energy efficiency category. The interesting aspect of the EE projects is that it has the most diverse representation of projects. There are 40 sectors with projects under the EE category. Besides the energy intensive sectors like iron & steel, cement, chemicals, fertilisers, oil & gas, power generation, textiles, etc., some of the unconventional sectors with projects under this category include agriculture, electronics, telecom, and water.

In this category, the largest number of projects are from the iron & steel sector (182) followed by power (71). Lighting, cement, buildings, oil & gas, chemicals, and pulp & paper industry are some of the other leading sectors in this category. The 'others' comprises carbon black (11 projects); automobile (9 projects); sugar, transport (7 projects each); aluminium, pharmaceuticals (6 projects each); glass, metal (5 projects each); agriculture, distillery, electronics, infrastructure, synthetics (4 projects each); agro industry, ceramics and tiles, tyres (3 projects each); diversified , polymers, water (2 projects each); Cleantech, FMCG, graphite, gypsum, industrial gases, mining, refractory, telecom (1 project each). This clearly demonstrates the immense potential for energy efficiency improvements across a wide range of sectors.

In terms of expected CERs, the iron & steel sector again leads with 36% of the expected CERs till 2012 under this category. While the power sector accounts for just around 11% of the total

projects under this category, it accounts for almost 28% of the expected CERs until 2012 under this category. The other highly energy intensive sectors like cement and oil & gas clearly lead other sectors in terms of expected CERs generation. An interesting aspect is the high potential shown by the lighting sector for emissions reductions.

The energy efficiency category has 127 waste heat recovery and utilization projects with the Iron & Steel sector accounting for majority of these projects. There are 131 projects pertaining to energy efficiency improvement under this category. The Power sector has projects such as replacement of fuel, waste heat recovery, supercritical technology based power generation, supply side energy efficiency, and grid connected energy efficient power generation. Under the Lighting sector majority of the projects belong to compact fluorescent lamp (CFL) distribution, followed by energy efficient lighting and Municipal Street lighting projects.

Forestry

Forestry projects dominate in this category with 14 projects followed by 1 project in agro industry. The total expected CERs from these 15 projects amount to approximately 10.7 million.

Table 11: Sector-wise break up of projects in the Forestry category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects
Agro Industry	1	2.37
Forestry	14	8.40

The forestry sector is dominated by reforestation projects with a total of 9 out of 15 projects, followed by 3 sustainable forest management projects, 2 afforestation projects and 1 project on rehabilitation of degraded wasteland.

Figure 4(a): Sector wise break up of forestry projects approved as on June 2012

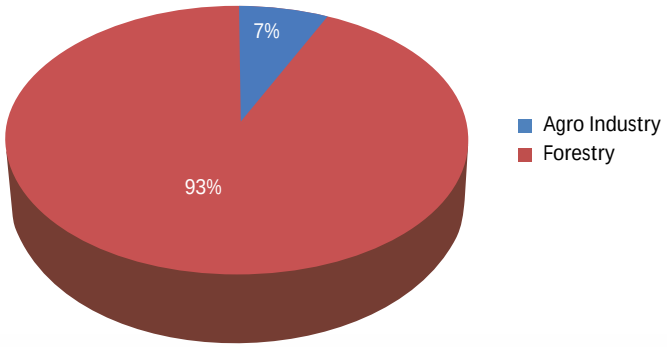


Figure 4 (b): Sector wise break up of forestry projects by CER volume till December 2012 as on June 2012

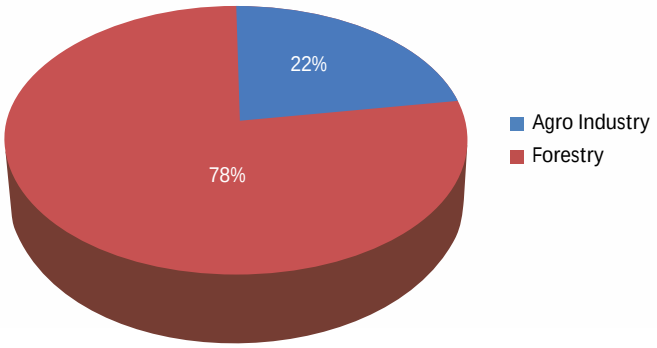


Figure 4: A representation of approved projects in the forestry category

Figure 4 depicts a sectoral break-up and analysis of CDM projects under the forestry category. Community organizations clearly dominate this sector in terms of number of projects initiated and potential CERs with a total of 14 approved projects. Agro industry accounts for 22% by volume of total CERs to be generated.

The reasons for smaller number of forestry projects are lack of clear guidelines and manuals on forestry, absence of nationally approved methods for development of baselines, measurement, monitoring, etc. and high transaction costs with respect to the average scale of operation of these projects. The promotion of programmatic CDM in this sector however can change the scenario as this would address some of the constraints like lack of funds and high transaction costs faced by forestry projects. The forestry project category still has a long way to go to realize its potential for GHG mitigation.

Fuel Switch (FS)

This section presents an elaborate analysis of CDM projects from the fuel switch (FS) category

Table 12: Sector-wise break-up of projects in the fuel switch category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects (as of June 2012)	Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects (as of June 2012)
Power	19	50.48	Electronics	5	0.34
Chemicals	16	4.81	Iron & Steel	4	0.22
Ceramics &Tiles	16	0.85	Pharmaceuticals	3	0.09
Textiles	7	1.39	Diversified	3	0.15
Cement	7	1.78	Food Processing	3	0.27
Fertilizers	6	3.73	Others	17	2.3

Note: Others consists of Petrochemicals, Pulp & Paper, Oil & Gas and Glass (2 projects each); FMCG, Lighting, Automobile, Metal, Transport, Rubber, Silica, Refractory and Community (1 project each)

Table 12 represents a detailed break-up of approved projects in the fuel switch category. Under this category, the maximum number of projects belongs to the power (19) sector followed by chemicals (16), ceramics and tiles (16) sector. Some other key sectors which have projects under this category are textiles, cement and fertilizers.

Figure 5 (a): Sector-wise break-up of approved fuel switch projects (as of June 2012)

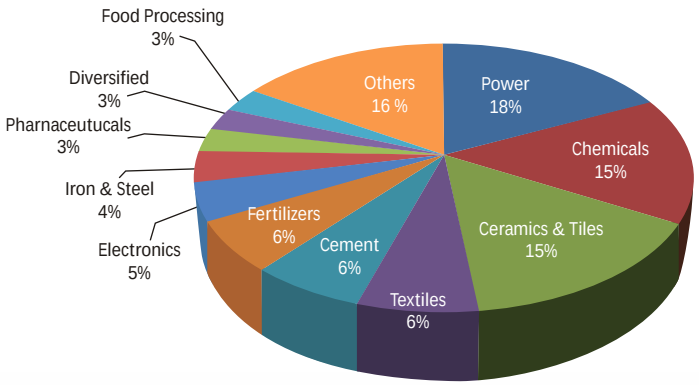


Figure 5 (b): Sector-wise break-up of expected CERs upto 2012 from approved fuel switch category (June 2012)

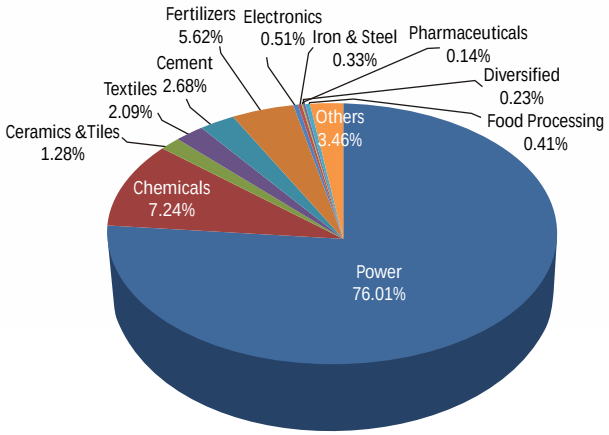


Figure 5: A representation of approved projects in the fuel switch category

In terms of expected CERs till 2012 from this category, the power sector dominates the pie with over 50 million CER potential. Chemicals and fertilisers are the other major contributors to the CER volume in this category.

In the fuel switch category there are 37 projects which involve the replacement of fossil fuel by biomass with majority of these projects belonging to the ceramics & tiles sector followed by the chemicals sector. There are 34 projects involving fuel switching from carbon intensive fuel to natural gas from the power, fertilizers, textiles, and chemicals sectors. Other projects under this category belong to fuel switch from natural gas and coal to hydrogen, and usage of waste heat generated during the project cycle.

Industrial Process (IP)

This section presents an elaborate analysis of CDM projects from the industrial process category.

Table 13: Sector-wise break-up of projects and expected CERs till 2012 in the industrial process category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects (as of June 2012)	Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects (as of June 2012)
Oil & Gas	14	5.26	Agro Industry	5	0.29
Pulp & Paper	11	2.12	Metal	4	3.59
Chemicals	9	82.30	Waste Management	4	0.53
Fertilizers	8	7.71	Food Processing	4	0.21
Distillery	8	2.61	Others	10	14.20
Sugar	7	1.13			

Note: "Others" consists of FMCG, Power, Iron & Steel and Petrochemicals (2 projects each); Mining and Rubber (1 project each)

Figure 6(a) depicts the sectoral break-up of approved projects (as of June 2012) in the industrial process category. Under this category the maximum number of projects approved belongs to the oil and gas sector (14) followed by the pulp & paper industry (11), chemicals (9), fertilizers (8) and distillery (8).

Figure 6(a): Sector-wise break-up of approved projects under industrial process category (June 2012)

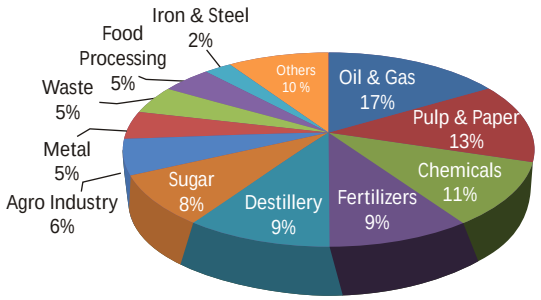


Figure 6 (b): Sector-wise break-up of expected CERs upto 2012 from approved CDM projects under industrial process category (up to June 2012)

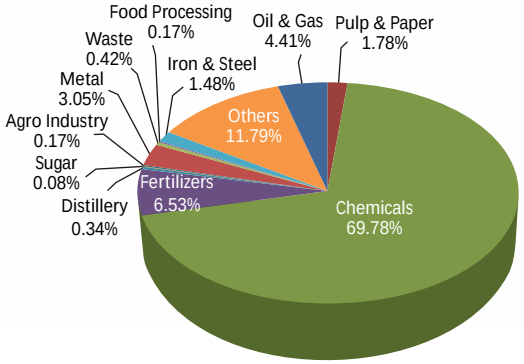


Figure 6 (a) and (b): A representation of approved projects in the industrial process category

In terms of expected CERs till 2012 from this category, the chemical sector dominates the pie with over 82 million CER potential. One of the key reasons behind this huge CER volume is the seven HFC projects proposed by refrigerant manufacturing units. Fertilizers, oil & gas are the other contributors to the CER volume in this category.

Table 14: Sub-category wise break-up of projects and expected CERs till 2012 in the industrial process category as on June 2012

Industrial Process projects (Sub-category)	Number of projects	Expected CERs (in million) upto 2012
Methane Recovery	40	18.61
Process Modification	23	11.71
Gas Flaring	13	5.27
HFC	7	82.19
PFC	1	2.26
TOTAL	84	120.0

Figure 6 (c) Sub-sector break-up of number of projects in the industrial process category, as on June 2012

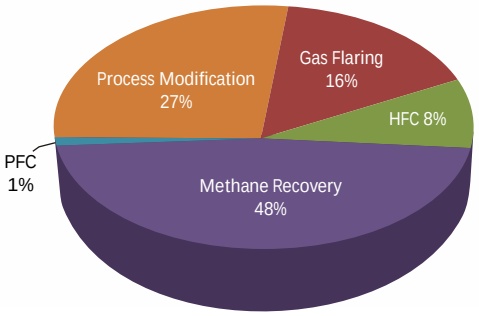


Figure 6 (d) Sub-sector break-up of percentage of CERs expected till 2012 from industrial process category, as on June 2012

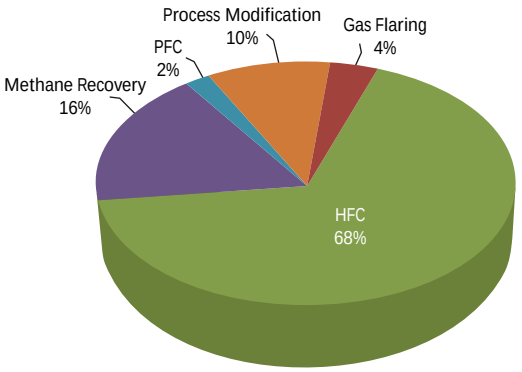


Table 14 and Figures 6 (c) and (d) portray a break-up of number of projects and CER potential of projects under different sub-categories in the IP category. The sub-categories under IP are methane recovery, process modification, HFC, gas flaring and PFC. Maximum number of projects under this category are from methane recovery sub-category (40), followed by process modification (23), and gas flaring (13). However, the highest CER potential lies in CER rich HFC projects mainly proposed by the chemicals industry. The methane recovery sub category has the second highest potential of expected CERs.

Municipal Solid Waste Management (MSW)

This section presents an analysis of CDM projects under the MSW management category.

Table 15: Sector-wise break-up of projects and expected CERs till 2012 in the municipal solid waste management (MSW) category as on June 2012

Sector	Number of Projects	Expected CERs (in million) upto 2012
Waste Management	38	10.38
Power	3	1.12
Fertilizers	1	0.09
TOTAL	42	11.59

The MSW category is dominated by Waste-to-Energy projects with a total 18 projects. Waste-to-Energy projects are followed by 15 composting projects under this category. MSW Industrial process accounts for 8 projects under this category while there is one landfill project.

Under the Municipal Waste category (MSW) management category, as shown in figure 7, out of the total 42 projects, 38 are from the waste management sector alone commanding around 10 million CER potential upto 2012. Given the high volume of MSW generation in the country, this segment's CDM potential remains largely unexploited.

Figure 7 (a) Sector wise break-up of approved MSW based projects (as of June 2012)

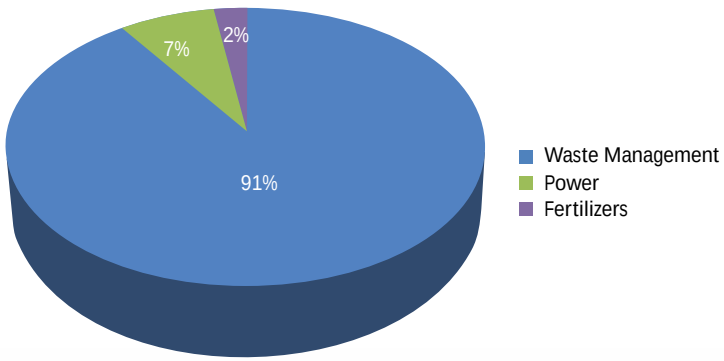


Figure 7(b) Sector-wise break-up of expected CERs upto 2012 from approved MSW category (June 2012)

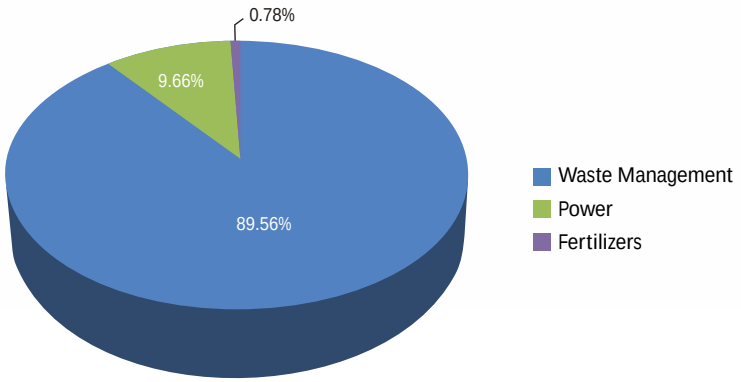


Figure 7: A representation of approved projects in the MSW category

In terms of expected CERs till 2012 from this category, the waste management sector dominates the pie with over 10 million CER potential. The waste management sector is followed by the power and fertiliser sectors as contributors to the CER volume in this category.

Renewable Energy (RE)

This section presents an analysis of approved CDM projects under the renewable energy category

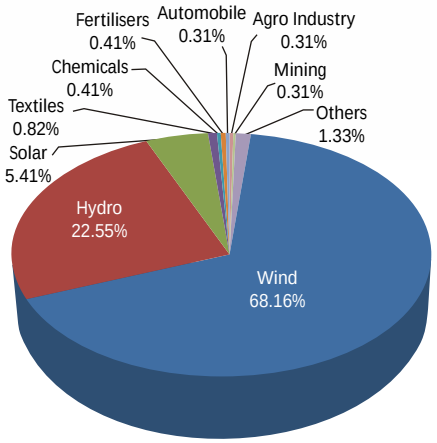
Table 16: Sector-wise break-up of projects and expected CERs till 2012 in the renewable energy category as on June 2012

Sector	Number of Projects	Expected CERs (in million) upto 2012	Sector	Number of Projects	Expected CERs (in million) upto 2012
Wind	668	74.68	Fertilisers	4	0.15
Hydro	221	67.04	Automobile	3	0.10
Solar	53	2.31	Agro Industry	3	0.05
Textiles	8	0.25	Mining	3	0.13
Chemicals	4	0.19	Others	13	1.10

Note: "Others" consists of Metal, Pharmaceuticals, Ceramics & Tiles, and Cement (2 projects each); Buildings, Diversified, FMCG, Food Processing, and Renewable - All (1 project each). The entry under 'Renewable-All' is a PoA consisting of Wind, Solar and Hydro projects.

Under the Renewable energy category, as shown in Table 16, out of the total 980 projects, 668 are wind projects alone commanding more than 74 million CER potential upto 2012.

Figure 8 (a) Sector-wise break-up of renewable energy projects approved (as on June 2012)



In terms of expected CERs till 2012 from this category, the Wind sector dominates the pie with 74 million CER potential. The wind sector is followed by the hydro sector (67 million) as the other major contributor to the CER volume in this category.

Figure 8 (b) Sector-wise break-up of expected CERs upto 2012 from approved renewable energy category (June 2012)

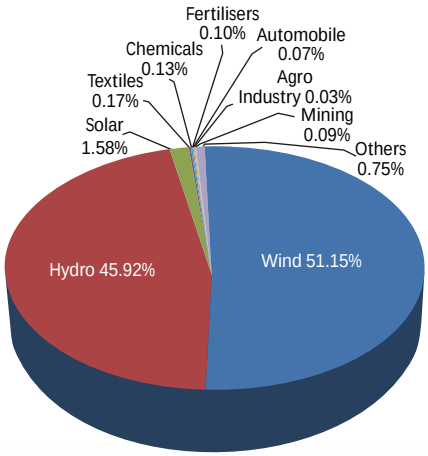


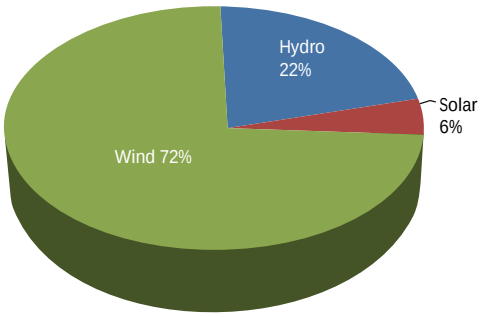
Table 17: Project type break-up of Renewable Energy projects

Projects	Number of projects	CERs Expected till 2012 (in million)
Wind	705	77.51
Hydro	221	67.04
Solar	53	2.31
Total	980	146.0

The total number of projects also includes one PoA which entails all three sources of renewable energy (wind/hydro/solar).

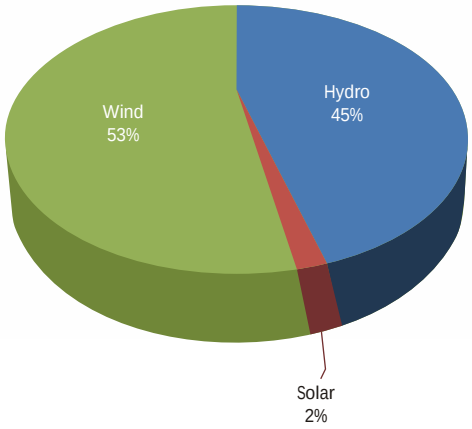
Table 17 depicts a project type break-up and analysis of CDM projects under the renewable energy category. This category consists of sectors generating power from renewable sources, namely, wind, hydro and solar. Wind projects (72%) clearly dominate the pie in terms of total number of projects. While wind sector accounts for 668 projects other sectors too have implemented wind power projects for captive consumption, taking the total count of wind projects to 705. There also are a high number of hydro projects in the pipeline. However, solar projects remains rather untapped with only 53 projects in the total portfolio.

Figure 8 (c) Project type break-up of renewable energy projects approved (as on June 2012)



In terms of CER potential expected till 2012, the wind sector (53%) has the highest number of CER potential followed by the hydro sector (45%). The hydro sector demonstrates great potential for CER generation given its significant share in the expected CERs upto 2012 inspite of constituting around 22% of the approved renewable energy projects.

Figure 8 (d) Project type break-up of renewable energy projects by CER volume till 2012



Renewable Energy (Biomass)

Power is the most dominant sector in this category with 153 projects followed by sugar with 101 projects and agro industry with 38 projects. The other major sectors which have projects under this category are textiles (33), pulp & paper (28), food processing (23), distillery (15), community (13), and chemicals (11).

Table 18: Sector-wise break up of projects in the Renewable Energy (Biomass) category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects	Sector	Number of Projects	Expected CERs (in million) till 2012 from Approved Projects
Power	153	30.74	Distillery	15	2.04
Sugar	101	30.05	Community	13	1.24
Agro Industry	38	5.80	Chemicals	11	2.11
Textiles	33	4.06	Pharmaceuticals	8	0.72
Pulp & Paper	28	6.86	Iron & Steel	6	1.28
Food processing	23	1.23	Others	44	9.76

Note: Others consists of Aluminium, Animal Feed, Cement, Cosmetics, FMCG, Healthcare, Infrastructure, Metal, Oil & Gas, Polymers, Rubber, Transport (1 project each); Asbestos, Cleantech, Dairy, Tyres, Wood (2 projects each); Ceramics & Tiles, Diversified, Fertilizers, Livestock, Synthetics and Waste Management (3 projects each); Petrochemicals (4 projects).

Figure 9(a): Sector-wise break-up of approved projects in renewable biomass category

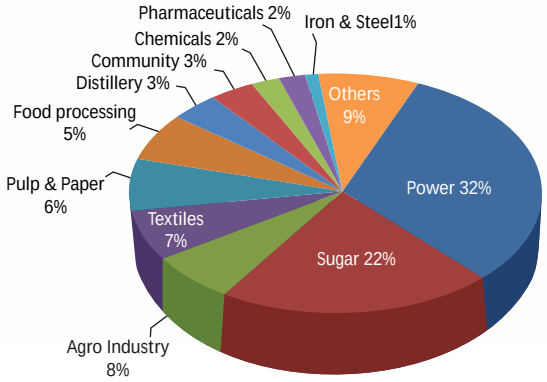


Figure 9(b): Sector-wise break-up of expected CERs upto 2012 from approved projects under renewable biomass category

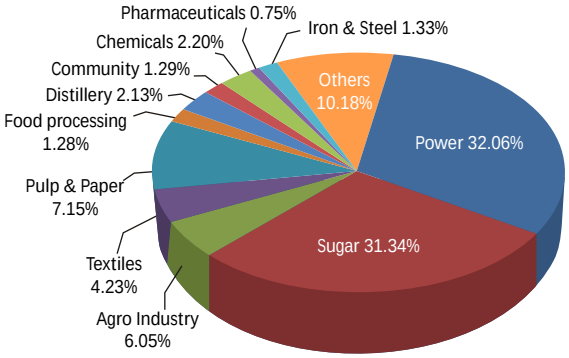


Figure 9: A representation of approved projects in the renewable biomass category

Figure 9 above indicates that power and sugar sectors contribute the highest number of projects and CERs in this category. While the sugar sector is second in terms of number of projects, it contributes almost the same in terms of CERs generated. The pulp & paper sector ranks lower than the textiles and agro industry sectors in terms of number of projects but has a higher share of the CERs generated.

Under the renewable energy (biomass) category there are 321 biomass based projects which mainly use bagasse, risk husk, agricultural residue, saw dust, etc. There are 107 cogeneration projects in this category. Majority of the cogeneration projects are rice husk and bagasse based. The other projects under the renewable energy (biomass) category use poultry litter, biogas, cattle dung and industrial waste.

C.2. Registered Projects

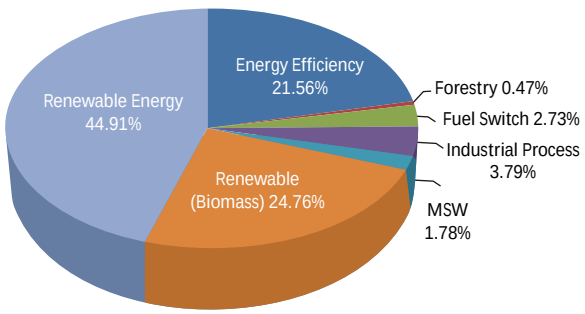
C.2.1. Analysis by Category (Project Type)

This section gives a detailed category-wise (CDM project category) break-up and analysis of the total registered CDM projects from India (844) as of June 2012.

Table 19: Category analysis of registered projects (as of June 2012)

CDM Category	Number of Registered Projects	Certified Emissions Reductions (CERs) expected till Dec 2012 (in millions)
Renewable Energy	379	80.37
Renewable (Biomass)	209	50.57
Energy Efficiency	182	79.13
Industrial Process	32	94.17
Fuel Switch	23	15.70
MSW	15	3.62
Forestry	4	7.07
Total	844	330.63

Figure 10 (a): Registered Indian projects: category-wise (June 2012)



10 (b): Category-wise break-up of expected CERs upto 2012 from registered projects (June 2012)

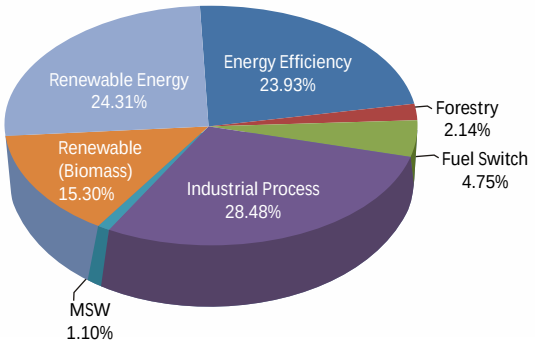


Figure 10: Break-up of registered projects (as of June 2012)

Figures 10 (a) & 10 (b) represent a break-up of total registered CDM projects from India. As of June 2012, there were a total of 844 CDM projects registered with the CDM EB. It is evident from the above pie diagrams that highest numbers of registered projects are from renewable energy (44.91%) and renewable biomass (24.76%) categories, closely followed by energy efficiency category. This trend is slightly different from the trend observed in total approved projects where renewable energy (42%) and energy efficiency (28%) are the top categories closely followed by renewable biomass (20%). This shows that the registration rate of energy efficiency projects is slightly lower in comparison to their proportion in the total CDM pipeline. Renewable biomass projects on the other hand have a higher proportion of registered projects vis-a-vis their share in the total CDM pipeline. The share of forestry, MSW, industrial process and fuel switch projects in registered projects is not very different from their share in the total CDM pipeline.

The trend observed in the CER potential of the registered projects under different CDM categories is also slightly different. Industrial Process (28.48%) leads in terms of the expected CERs inspite of accounting for barely 4% of the registered projects followed by renewable energy and energy efficiency (24% each). While renewable biomass accounts for close to 25% of the registered projects, its share in expected CERs to be generated is around 15%. The miniscule contribution of MSW category to the total number of registered projects (1.78%) and the expected CERs generated (3.62 million) despite the large quantum of MSW generation and numerous MSW projects in the country, reflects the untapped potential as far as CDM is concerned and the absence of a conducive policy framework to promote such projects.

C.2.2. Sectoral Analysis of Registered Projects

This section presents an elaborate sector-wise break-up and analysis of the total Indian registered projects (844) as of June 2012.

Table 20: A sector-wise break-up of registered projects under different project categories

CDM Project Category								
Sector by Project Activity	Energy Efficiency	Forestry	Fuel Switch	Industrial Process	Municipal Solid Waste	Renewable Energy (Biomass)	Renewable Energy	Total
	A	B	C	D	E	F	G	H
Agriculture								
Agro Industry	1			2		21	1	25
Aluminium	1							1
Animal Feed						1		1
Asbestos						2		2
Automobile	2						1	3
Brick	4							4
Buildings	7							7
Carbon Black	2							2
Cement	20		3			1	1	25
Ceramics & Tiles	1					1		2
Chemicals	8		4	7		4		23
Cleantech						2		2
Community	12					5		17
Cosmetics								
Dairy						1		1
Distillery				3		4		7
Diversified			1					1
Electronics								
Fertilisers	10		4	7	1		1	23
FMCG	1					1		2
Food processing						7		7
Forestry		4						4
Glass	2		1					3
Graphite								
Gypsum								
Health Care								
Hydro							94	94
Industrial Gases								
Infrastructure								
Iron and Steel	42			1		3		46
Lighting	6							6
Livestock								

CDM Project Category								
Sector by Project Activity	Energy Efficiency	Forestry	Fuel Switch	Industrial Process	Municipal Solid Waste	Renewable Energy (Biomass)	Renewable Energy	Total
	A	B	C	D	E	F	G	H
Metal	2						2	4
Mining	1						3	4
Oil & Gas	15			3		1		19
Petrochemicals	4					1		5
Pharmaceuticals			2			3	1	6
Polymers	1							1
Power *	19		5		1	85		110
Pulp & Paper	9		1	6		11		27
Refractory								
Renewable - All								
Rubber								
Silica								
Solar							11	11
Sugar	3			3		37		43
Synthetics	1							1
Telecom								
Textiles	4		2			18		24
Transport	2							2
Tyres	2							2
Waste Management					13			13
Water								
Wind							264	264
Wood								
Grand Total	182	4	23	32	15	209	379	844

Table 20 depicts the sector-wise break-up of registered projects under different CDM categories. The table illustrates numeric representation of projects in different industrial sectors under different categories. The maximum number of projects has been registered from the wind sector followed by power and hydro sectors. CDM projects from the power sector belong to energy efficiency, fuel switch, renewable biomass, and MSW. The single project in MSW category from the power sector is a project which generates power from MSW in a district in Andhra Pradesh. Some of the other major players are iron & steel (46) and sugar (43). The iron & steel sector involves projects in energy efficiency, industrial process, and renewable biomass. Out of the total

43 projects in the sugar sector, 37 are in renewable biomass and 3 each in energy efficiency and industrial process. Overall, the maximum number of projects from India registered by the UNFCCC is in the renewable energy (379), renewable biomass (209), and energy efficiency categories (182).

It is evident from table 20 that maximum numbers of sectors have registered projects under the energy efficiency category (27) followed by the renewable biomass category (20). Moreover some of the unorganized and energy intensive sectors like bricks and glass also have energy efficiency projects. This clearly highlights the significant impetus being accorded to energy efficiency by different sectors of the Indian economy and the enormous future scope for these sectors to enhance energy efficiency and reduce the energy intensity of their operations.

Table 21: Category-wise representation of leading sectors in the CDM registered projects from India

	Energy Efficiency	Forestry	Fuel	Industrial Switch	MSW Process	Renewable Biomass	Renewable Energy
Top Sectors	Iron & Steel, Cement and Power	Community	Power, Chemicals and Fertilisers	Fertilisers, Chemicals, Pulp & Paper	Waste Management	Power, Sugar, Agro Industry, Textiles	Wind and Hydro

Note: The table above does not represent an exhaustive list of all the sectors that figure in the registered projects and is only representative of the top sectors in each category.

Table 21 depicts a category wise representation of the top sectors (in terms of number of registered projects). These are the sectors which contribute to maximum number of registered projects under the respective project categories. These are sectors selected purely on the basis of the total number of registered projects they contribute in each project category and the table does not represent an exhaustive list of all the sectors that have registered CDM projects.

Figure 11: Sectoral Break-up of registered projects in the leading industry sectors under different CDM project categories

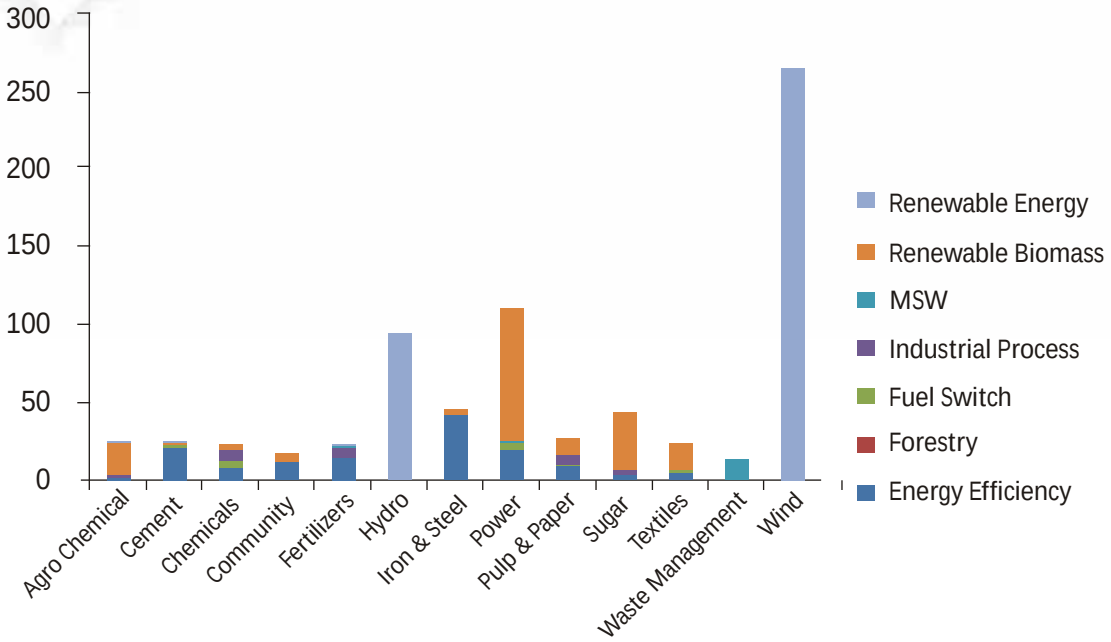


Table 22: Sectoral break-up of registered projects in the top sectors with maximum number of registered CDM projects from India

Sector	Energy Efficiency	Forestry	Fuel Switch	Industrial Process	MSW	Renewable Biomass	Renewable Energy	Total
Agro Industry	1			2		21	1	25
Cement	20		3			1	1	25
Chemicals	8		4	7		4		23
Community	12					5		17
Fertilisers	10		4	7	1		1	23
Hydro							94	94
Iron & Steel	42			1		3		46
Power	19		5		1	85		110
Pulp & Paper	9		1	6		11		27
Sugar	3			3		37		43
Textiles	4		2			18		24
Waste Management					13			13
Wind							264	264
Grand Total	127	3	17	26	17	184	361	734

Figure 11 and Table 22 represent a sector-wise break-up of registered projects under each CDM category from the sectors with maximum registered projects. As evident from Table 22, there are maximum sectors with registered projects under energy efficiency (10) including all the highly energy intensive sectors. Iron & Steel sector accounts for a major chunk of projects under this category followed by cement and power sectors. The next dominant category with respect to sectoral representation is Renewable (Biomass) with 9 sectors under it. There are more registered Renewable (Biomass) projects (184) than energy efficiency (127) as is evident from the table. The power (power from biomass) and sugar sectors dominate the vast majority of projects under this category with 85 biomass projects from power sector and 37 projects from sugar sector. Interestingly, as far as registered projects are concerned, the power sector accounts for more biomass projects (85) than energy efficiency projects (19). Wind and hydro sectors clearly dominate the renewable energy category with 264 and 94 projects, respectively. The 3 categories - energy efficiency, renewable energy, and renewable biomass together constitute a bulk of the registered projects (91.56%) in the top sectors of the Indian CDM pipeline.

In terms of the total registered projects from these top sectors, the maximum are from power (110) followed by hydro sector (94). Then at the next level there is a sharp drop to just above 40 registered projects - 46 from iron & steel, and 43 from sugar sectors.

Analysis by Category

Energy Efficiency

This section presents an analysis of CDM projects from the energy efficiency category. The dominant sectors under energy efficiency are iron & steel, cement, power, oil & gas, community, and fertilisers.

Table 23: Sector-wise break-up of registered projects and expected CERs till 2012 in the energy efficiency category as on July 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Registered Projects	Sector	Number of Projects	Expected CERs (in million) till 2012 from Registered Projects
Iron & Steel	42	31.31	Chemicals	8	0.90
Cement	20	11.93	Buildings	7	0.63
Power *	19	15.10	Lighting	6	1.08
Oil & Gas	15	3.00	Brick	4	1.80
Community	12	1.20	Textiles	4	0.56
Fertilisers	10	4.77	Petrochemicals	4	0.23
Pulp & Paper	9	1.86	Others	22	4.76

Note: *"Others" consist of sugar (3 projects); automobile, carbon black, glass, metal, transport, tyres (2 projects each); agro industry, aluminium, ceramics & tiles, FMCG, mining, polymers, synthetics (1 project each).*

Figure 12 (a): Sector-wise break-up of registered projects under energy efficiency category

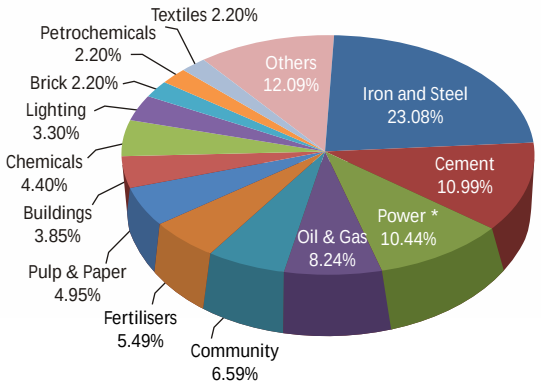


Figure 12(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under energy efficiency category

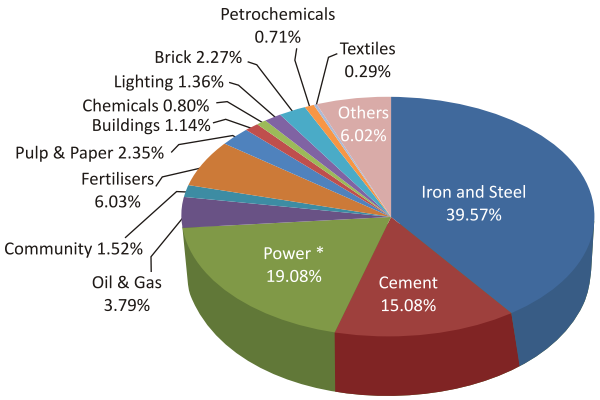


Figure 12: A representation of registered projects in the energy efficiency category

The figures 12(a) and 12(b) indicate that the maximum expected CERs are from the Iron & Steel, Power and Cement sectors. These 3 sectors alone contribute almost two-thirds of the expected CERs under this category. This indicates the immense potential for emissions reduction under these highly energy intensive sectors. The fertilisers and oil & gas sectors are the other sectors which show significant potential in terms of CERs. A majority of the registered projects under 'community' are related to lighting energy efficiency in rural areas.

Forestry

This section presents an analysis of registered CDM projects from the forestry category.

Table 24: Sector-wise break-up of registered projects and expected CERs till 2012 in the forestry category as on June 2012

Sector	Number of Registered Projects	Expected CERs (in million) till 2012 from Registered Projects
Forestry	4	7.07

Figure 13(a): Sector-wise break-up of registered projects under forestry category

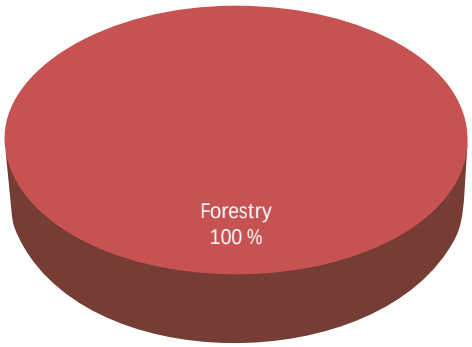
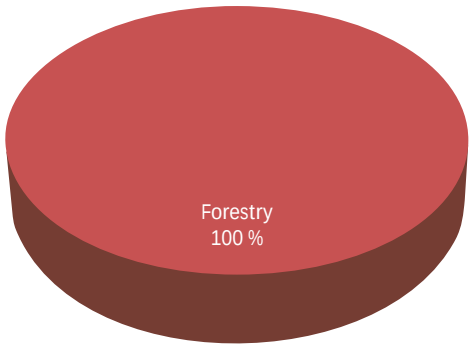


Figure 13(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under forestry category



The figures 13(a) & 13(b) indicate that all projects have been registered under 'forestry' in the forestry category. These projects are related to afforestation, reforestation and rehabilitation of degraded wasteland.

Fuel Switch

This section presents an elaborate analysis of registered CDM projects from the fuel switching (FS) category.

Table 25: Sector-wise break-up of registered projects in the fuel switching category as on June 2012

Sector	Number of projects	Expected CERs (in million) till 2012 from Registered Projects (as of June 2012)
Power	5	9.42
Fertilizers	4	2.25
Chemicals	4	1.67
Cement	3	1.26
Textiles	2	0.54
Pulp & Paper	1	0.30
Diversified	1	0.13
Pharmaceuticals	2	0.07
Glass	1	0.02
TOTAL	23	15.70

Table 25 represents a detailed break-up of registered projects in the fuel switch category. Under this category, the maximum number of projects belongs to the power (5) sector followed by the chemicals and fertilizers (4) sectors, respectively.

Figure 14(a): Sector-wise break-up of registered fuel switching projects (as of June 2012)

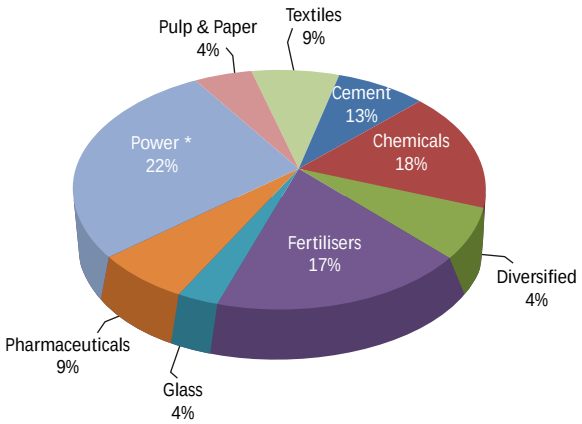


Figure 14(b): Sector-wise break-up of expected CERs upto 2012 from registered projects in fuel switch category (June 2012)

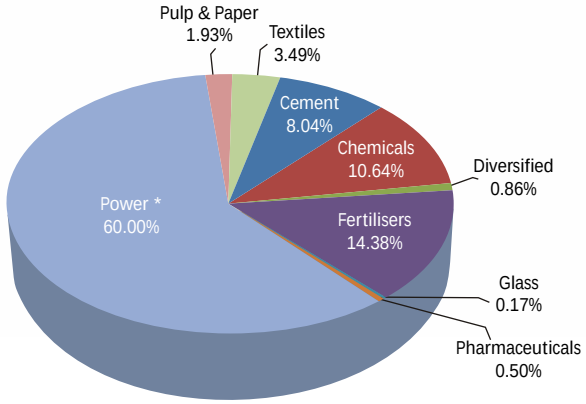


Figure 14: A representation of registered projects in the fuel switch category

In terms of expected CERs till 2012 from this category, the power sector dominates the pie with over 9 million CER potential. The power sector is followed by the fertilizers, and chemicals sectors, respectively.

Industrial Process

This section presents an elaborate analysis of registered CDM projects from the industrial process category.

Table 26: Sector-wise break-up of registered projects and expected CERs till 2012 in the industrial process category as on June 2012

Sector	Number of projects	Expected CERs (in million) till 2012 from Registered Projects (as of June 2012)
Chemicals	7	82.17
Fertilizers	7	7.45
Pulp & Paper	6	1.34
Distillery	3	1.66
Sugar	3	0.72
Oil & Gas	3	0.63
Agro Industry	2	0.09
Iron & Steel	1	0.06
TOTAL	32	94.1

Figure 15 depicts the sectoral break-up of registered projects (as of June 2012) in the industrial process category. Under this category the maximum number of projects approved belongs to the chemicals (7) and the fertilizers (7) sectors followed by the pulp & paper (6), sugar (3), oil & gas (3) and distillery (3) sectors.

Figure 15(a): Sector-wise break-up of registered projects under industrial process category (June 2012)

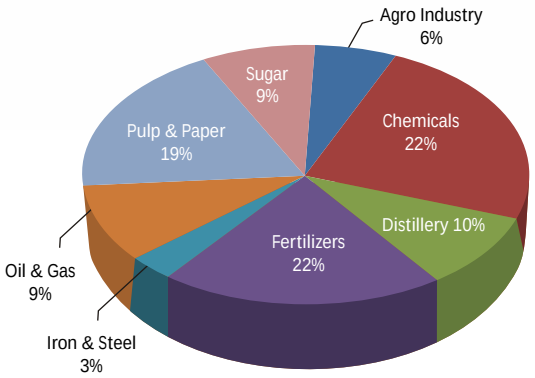


Figure 15(b): Sector-wise break-up of expected CERs upto 2012 from registered projects in the industrial process category (June 2012)

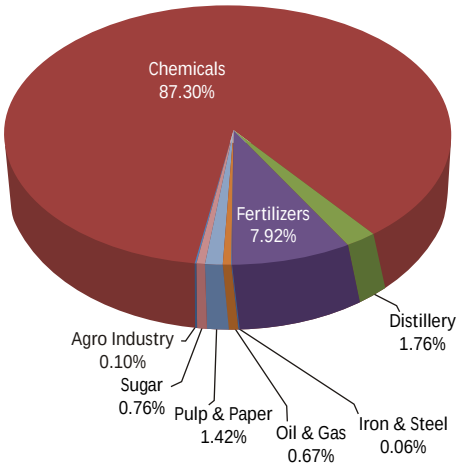


Figure 15: A representation of registered projects in the industrial process category

In terms of expected CERs till 2012 from the registered projects under the Industrial Process category, the chemicals sector dominates the pie with over 82 million CER potential. One of the key reasons behind this huge CER volume is the four HFC projects proposed by refrigerant manufacturing units. The chemicals sector is followed by fertilizers, distillery and pulp & paper sectors. This category has five broad types of projects that are based on process modification, gas flaring, HFC, PFC, and methane recovery from industrial processes. The following page provides a break-up of industrial process related CDM projects under these five sub categories that have been registered by the CDM Executive Board.

Table 27: Sub-category wise break-up of registered projects and expected CERs till 2012 in the industrial process category as on June 2012

Industrial Process projects (Sub-category)	Number of registered projects	Expected CERs (in million) upto 2012
Process Modification	13	8.76
Methane Recovery	12	2.70
HFC	6	82.12
Gas Flaring	1	0.57
PFC	0	0
TOTAL	32	94.1

Figure 15(c): Sub-sector break-up of number of registered projects in the industrial process category as on June 2012

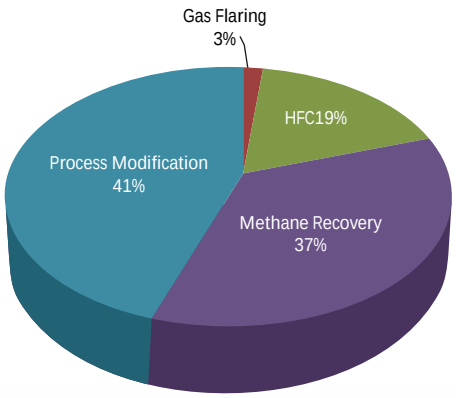


Figure 15(d): Sub-sector break-up of percentage of CERs expected till 2012 from the registered projects under the industrial process category as on June 2012

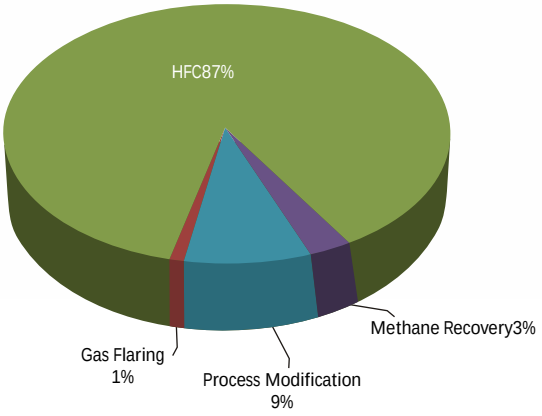


Table 27 and Figures 15(c) and 15(d) portray a break-up of number of registered projects and CER potential of different project sub-categories under the IP category. The maximum number of projects under this category are from process modification sub-category (13), followed by methane recovery (12), HFC (6) and gas flaring (1). It should be noted that that no PFC projects from the IP category have been registered. However, the highest CER potential lies in CER rich HFC projects (82.12 million, 77%) mainly proposed by the chemicals industry. The process modification sub category has the second highest potential of expected CERs followed by methane recovery sub-category.

Municipal Solid Waste (MSW)

This section presents an analysis of registered CDM projects under the MSW category.

Table 28: Sector-wise break-up of registered projects and expected CERs till 2012 in the municipal solid waste management (MSW) category as on June 2012

ISector	Number of registered projects	Expected CERs (in million) upto 2012
Waste Management	13	3.10
Power	1	0.42
Fertilizers	1	0.09
TOTAL	15	3.62

Under the Municipal Solid Waste management (MSW) category (all wind, solar and hydro projects), as shown in table 28, out of the total 15 projects, 13 are from the waste management sector alone, which means bulk of these projects are being developed by the private waste management sector, and a miniscule number of MSW projects are being undertaken by industry. The MSW project in the power sector relates to waste-to-energy and in the fertilizer sector it is a composting project.

Figure 16(a): Sector wise break-up of registered MSW based projects (as of June 2012)

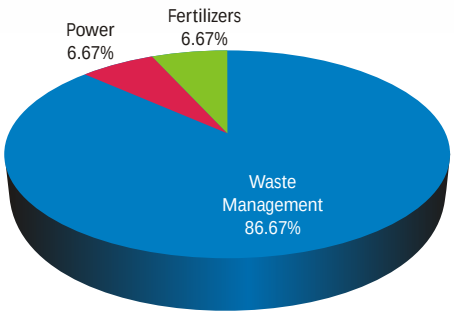


Figure 16(b): Sector-wise break-up of expected CERs upto 2012 from registered MSW projects (June 2012)

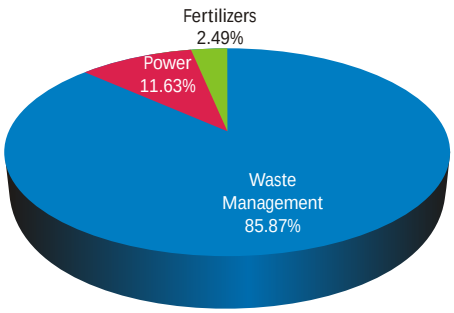


Figure 16: A representation of registered projects in the MSW category

The waste management sector dominates the pie with over 3 million CERs followed by the power and fertilizer sectors.

Renewable Energy (Biomass)

This category represents renewable energy projects from the biomass segment which have been separated from the renewable energy category described in the next section.

Table 29: Sector-wise break-up of registered projects and expected CERs till 2012 in the renewable biomass category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Registered Projects	Sector	Number of Projects	Expected CERs (in million) till 2012 from Registered Projects
Power	85	21.56	Community	5	0.50
Sugar	37	13.45	Distillery	4	5.60
Agro Industry	21	2.70	Chemicals	4	5.97
Textiles	18	2.49	Iron and Steel	3	8.75
Pulp & Paper	11	1.99	Pharmaceuticals	3	0.29
Food processing	7	0.31	Others	11	5.24

Note: *Others consist of Asbestos, Cleantech (2 projects each); Oil & Gas, Petrochemicals, Cement, Ceramics & Tiles, FMCG, Animal Feed, Dairy (1 project each)*

This category has a diverse sector mix that reflects the potential for biomass based projects in different sectors. Almost 20 sectors have registered CDM projects under this category, with the highest number being in the power sector followed by sugar and agro industry sectors. However, the potential CERs show that the project sizes are small. Though agro industry and textiles have 21 and 18 projects, respectively, in terms of CERs, the potential is very small in these two sectors, compared to the iron & steel, chemicals, and distillery sectors that have more than double the CERs but less than five times the number of projects as compared to the agro industry and textiles sectors.

Figure 17(a): Sector-wise break-up of registered projects under renewable biomass category

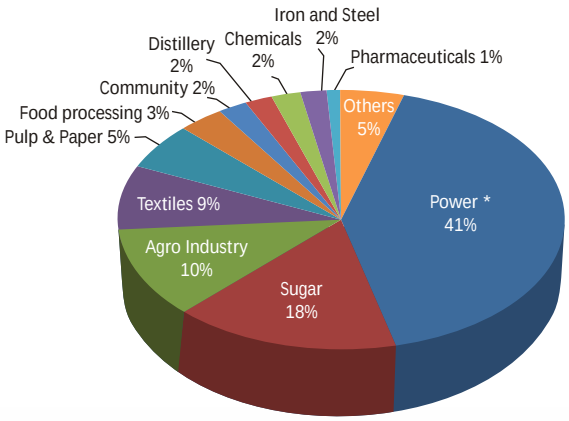


Figure 17(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under renewable biomass category

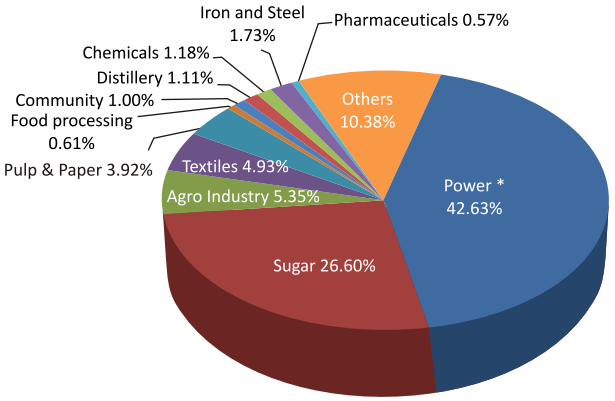


Figure 17: A representation of registered projects in the renewable biomass category

Figure 17 indicates that maximum number of projects is registered under the power, sugar, agro industry and textiles sectors. In terms of expected CERs the power and sugar and sectors have the highest number of CERs. These 2 sectors together contribute two-thirds of the expected CERs to be generated upto 2012. However, the number of CERs from power sector is small relative to the number of projects, which shows that the project sizes are small, as described above.

Renewable Energy

This section presents an analysis of CDM projects from the renewable energy category. The dominant sectors under this category are Wind and Hydro.

Table 30: Sector-wise break-up of registered projects and expected CERs till 2012 in the renewable energy (RE) category as on June 2012

Sector	Number of Projects	Expected CERs (in million) till 2012 from Registered Projects
Wind	264	40.22
Hydro	94	37.78
Solar	11	1.18
Mining	3	0.13
Metal	2	0.84
Others	5	0.20

Note: *Others consists of Agro industry, Automobile, Chemical, Fertilizers and Pharmaceuticals (1 project each)*

Under the Renewable energy category, as shown in Table 30, out of the total 379 projects, 264 are from the wind sector alone commanding more than 40 million CERs upto 2012. The other prominent players in this category are the Hydro and Solar sectors.

Figure 18(a): Sector-wise break-up of registered projects under renewable energy category

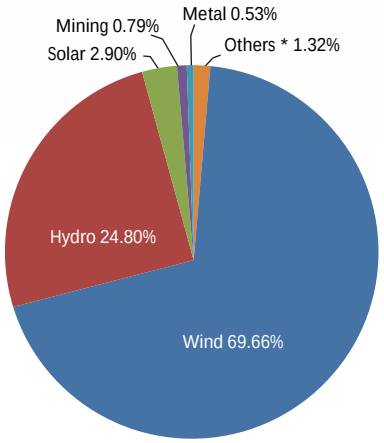


Figure 18(b): Sector-wise break-up of expected CERs upto 2012 from registered projects under renewable energy category

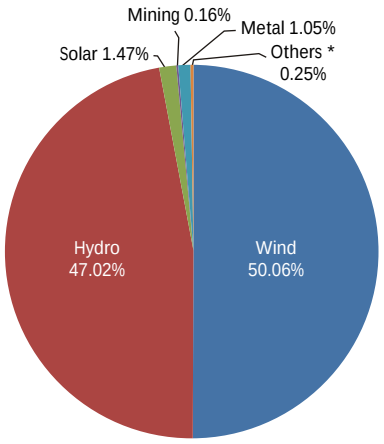


Figure 18: A representation of registered projects in the renewable energy category

Table 31: Project type break-up of Renewable Energy projects

Sector	Number of projects	CERs Expected till 2012 (in million)
Wind	274	41.40
Hydro	94	37.78
Solar	11	1.18
Total	379	80.36

**The total number of projects also includes one programme of activity (PoA) which entails all three sources of renewable energy (wind/hydro/solar).*

Figure 18 (c) Project type break-up of renewable energy projects registered (as on June 2012)

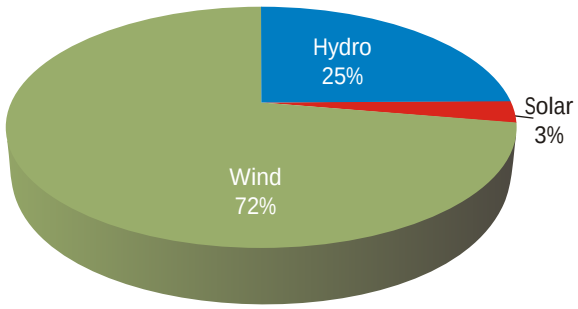


Figure 18 (d) Project type break-up of registered renewable energy projects by CER volume till 2012

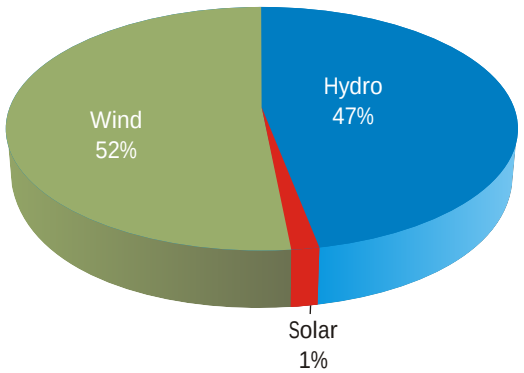


Table 31 depicts a project type break-up and analysis of CDM projects under the renewable energy category. This category consists of sectors generating power from renewable sources, namely, wind, hydro and solar. The wind sector clearly dominates the pie with its total number of projects. The hydro sector also has a considerable number of registered projects. However, the solar sector remains rather untapped with only 11 registered projects.

In terms of CER potential expected till 2012, the wind sector has the highest number of CER potential followed by the hydro sector. However, compared to the number of projects in these two sectors, the hydro sector's contribution to CERs is more than the wind sector, which shows that the project sizes in hydro are mostly large than in the wind sector. Wind projects, despite being three times more in number than hydro, contribute only about 3 million more CERs than hydro which has contributed 37.78 million CERs from 94 projects.

C.3. Programme of Activities (PoA)

A programmatic CDM project activity is an activity where the emissions reductions are achieved by multiple actions executed over time as a result of a government measure or an initiative by a "for profit" or "not-for-profit" entity. Examples include programmes to promote energy efficiency or fuel switching activities, or the use of renewable energy - by private households, in transportation sector, or by small enterprises, as well as voluntary or mandatory efficiency standards for equipments or facilities.

According to the United Nations Framework Convention on Climate Change, "A programme of activities (PoA) is a voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e. incentive schemes and voluntary programmes), which leads to anthropogenic GHG emission reductions or net anthropogenic greenhouse gas removals by sinks that are additional to any that would occur in the absence of the PoA, via an unlimited number of CDM programme activities (CPAs)."

A CDM Programme of Activities (PoA) occurs at two levels:

i) Programme level: At this level, the PoA is the organizational and financial framework that provides structure to the effort and is managed by a coordinating entity for no longer than 28 years.

ii) Programme activity level: At this level a single measure or a set of measures to reduce GHGs is applied to many plants or installations of the same type over a period of time.

PoAs are a tool to fund large umbrella programs to reduce GHG emissions. They consist of activities which otherwise would have been difficult, too expensive and time-consuming to be developed on a project-by-project basis. PoAs help the small island states and least developed countries (LDCs) to access the carbon finance market while supporting their development goals since project sizes and scale of national markets tend to be smaller in these regions.

There are 12 PoAs which have been approved by the Indian DNA (The analysis is based on data of total approved PoAs from India as on June 2012). These PoAs have been initiated by different organizations/companies/agencies. So far, 4 PoAs have been registered by the UNFCCC. The remaining 8 PoAs are yet to begin the process of validation and registration. The Coordinating/Managing Entities (CME) which have initiated PoAs in India are from diverse sectors such as: Manufacturing, Consulting, Solar, Local Self Government Department, Government agency, banking/financial institution and NGO. All the 12 approved PoAs are being managed by different entities.

- All the 4 registered PoAs are Multi-State and not restricted to a particular state
- The names of the 4 registered PoAs from India are -

  1) Promotion of Biomass Based Heat Generation Systems in India
  2) National Solar Power Development Programme, India
  3) First Solar PoA in India
  4) CFL lighting scheme - Bachat Lamp Yojana

  The PoA - Promotion of Biomass Based Heat Generation Systems in India - has 17 CPAs under it.
- The names of the other 8 approved* PoAs from India are -

  1) Demand Side Management (DSM) for accelerating the diffusion of energy-efficient chiller technology
  2) Manufacture and Distribution of CFLs in India
  3) Rajasthan Urban Solid Waste Composting Programme, India
  4) Dehradun District CFL Distribution Project, Uttarakhand, India

5) Energy Efficiency Improvements in Furnaces used in SME Steel industry clusters in India

6) Renewable Energy PoA in India

7) Biodigestor PoA

8) Development of Programmatic CDM Project for SWH installation under MNRE, UNDP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiatives: India Country Programme

While 2 of these PoAs are restricted to one state each the others are Multi- State PoAs.

Note: Approved refers to all CDM projects given approval by the Indian DNA.*

The pie-chart below gives a breakup of the status of all the PoAs initiated by different CMEs in India.

Figure 19: Break-up of PoAs based on registration status

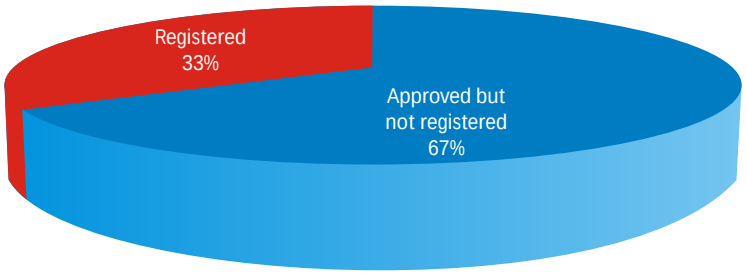


Table 32: Break-up of PoAs based on registration status, organizational status and project categories

PoA	Organization Sector	Status	Project Category
CFL lighting scheme - "Bachat Lamp Yojana"	Public Sector Entity	Registered	Energy Efficiency
Promotion of Biomass Based Heat Generation Systems in India	Cleantech	Registered	Renewable (Biomass)
First Solar PoA in India	Consultant	Registered	Renewable Energy
National Solar Power Development Programme, India	Consultant	Registered	Renewable Energy
Demand Side Management (DSM) for accelerating the diffusion of energy-efficient chiller technology	ESCOs	Approved	Energy Efficiency
Manufacture and Distribution of CFLs in India	Lighting	Approved	Energy Efficiency
Rajasthan Urban Solid Waste Waste Composting Programme, India	Public Sector Entity	Approved	Municipal Solid (MSW)
Dehradun District CFL Distribution Project, Uttarakhand, India	Consultant	Approved	Energy Efficiency
Energy Efficiency Improvements in Furnaces used in SME Steel industry clusters in India	Public Sector Entity	Approved	Energy Efficiency
Biodigestor PoA	NGO	Approved	Renewable (Biomass)
Development of Programmatic CDM Project for SWH installation under UNDP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiatives: India Country Programme	Cleantech	Approved	Renewable Energy
Renewable Energy PoA in India	Consultant	Approved	Renewable Energy

As seen in Table 32, the registered PoAs belong to the categories of Energy Efficiency, Renewable Energy and Renewable Biomass. The majority of the PoAs (both approved and registered) belong to energy efficiency category followed by renewable energy. The type of projects under PoAs also shows that small scale projects or projects with mass application have seen the light of the day because of the programmatic approach. This was possible due to economies of scale that PoAs provide in terms of transaction costs incurred and time taken, which would not have been the case under a project-by-project approach for these type of projects.

D Indian Corporate Sector Participation in CDM

Indian Industry has successfully demonstrated its commitment to greenhouse gas mitigation and over the years taken various initiatives to ensure that their operations are energy efficient and climate friendly. Market based mechanisms such as the Clean Development Mechanism have provided a major boost to industry and have mobilized the interest of corporates and technology providers towards enhancing use of energy efficiency and renewable energy technologies. The most significant achievement of CDM is that it mobilised industry action on climate change mitigation across all sectors of the economy.

FICCI analysis of the Indian CDM portfolio as on June 2012 reveals that over 1600 companies representing 55 sectors are involved in implementing 2355 projects. That CDM has made a difference is clearly evident from the increasing number of projects that entered the CDM pipeline from India. An additional 500 companies have entered the CDM pipeline, compared to the FICCI Analysis released in November 2011 of 1633 projects and 1100 companies in the pipeline until April 2010. Additional 500 companies joined the CDM bandwagon and additional 722 projects got approved over a period of 26 months, indicating that climate change is indeed being taken seriously by Indian Industry, despite the regulatory uncertainty about the post 2012 period at the international level. CDM has been recognized by the Indian corporate sector as an effective and efficient tool for GHG mitigation.

Corporate sector engagement was analysed using different parameters such as the project category and sectoral representation (sector by project activity[1]). The following sections will throw light on the results of the analysis in greater detail. Beginning with an analysis of all the companies in the portfolio in general, as the chapter progresses, the analysis delves deeper into a comparison with corporate participation in CDM amongst the Top 500 companies of the Indian Industry (based on total income + total assets).

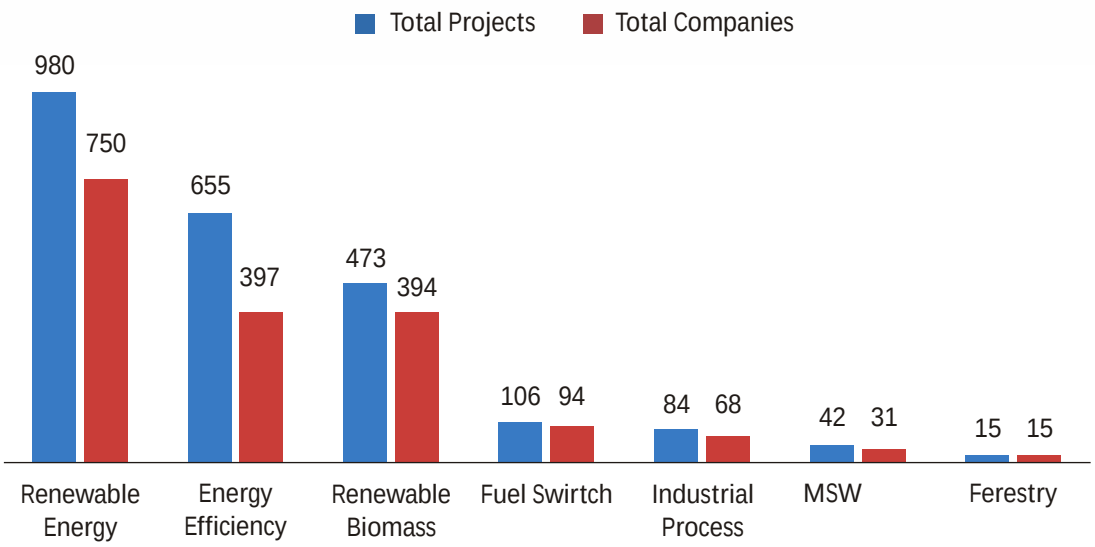
The following sections present an in-depth analysis of the participation of companies in CDM by project category and sector (by project activity) and provide a detailed account of the leading sectors (by project activity) in terms of involvement of companies.

[1] ***Project Activity - the sector where the project is actually taking place and which is claiming the CERs generated***

Distribution of Companies by Project Category

As of June 2012, over 1600 companies have proposed CDM projects from India. Figure below provides a break-up of the number of companies as well as the number of projects under each project category.

Figure 20: Number of companies and projects under each of the seven project categories



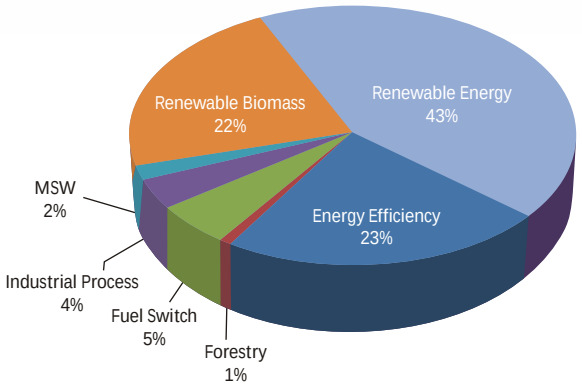
Renewable Energy (RE) projects have been found to be most popular with 750 companies involved in implementing 980 CDM projects (C:P = 1:1.3) under this category. This is followed by Energy Efficiency (EE) with 397 companies engaged in 655 projects (C:P = 1:1.65) and Renewable (Biomass) with 394 companies involved in 473 projects (C:P = 1:1.2).

If we look at the two least explored project categories, i.e. MSW and Forestry, we can observe interesting facts. A total of 31 companies have 42 projects in MSW. 21 out of 31 of the companies are from Waste Management sector, the rest 10 include Urban Local Bodies, Power, Distilleries, and Cement sectors. This shows that private companies are taking a lead in making use of CDM for MSW projects. In forestry, there are total 15 projects in the CDM portfolio which are being implemented by 15 organizations. Most forestry projects are being implemented by community based organizations such as NGOs, village community, etc. Only three corporates are involved in Forestry CDM projects. The reason behind this is lack of clear guidelines and manuals on forestry, nationally approved methods for development of baselines, measurement,

monitoring, etc. and high transaction costs, with respect to an average scale of operation of these projects. Promotion of private sector participation and programmatic CDM in this sector can change the scenario and address some of the constraints faced by the sector in development of forestry CDM projects.

The following pie chart gives the engagement of Indian Companies in CDM under different project categories.

Figure 21: Percentage of Indian Companies in CDM under the seven categories



43% of the companies in CDM are implementing Renewable Energy projects, followed by 23% in Energy Efficiency projects and 22% in Renewable Biomass projects. As per FICCI's Analysis of CDM projects until April 2010, these percentages were 34%, 27% and 25%, respectively. This clearly shows that since 2010, companies are focusing their CDM investments more in the Renewable Energy sector. The percentage of companies in energy efficiency and renewable biomass has gone down.

D.1. Sectoral Distribution of Companies by Project Activity

Organizations representing over 50 sectors today are engaged in CDM projects. The table below shows the break-up of companies by sectors (by project activity)

Table 33: Break up of the companies by sectors

Sector by Project Activity	No. of Organizations	Sector by Project Activity	No. of Organizations
Agriculture	4	Infrastructure	5
Agro Industry	49	Iron and Steel	141
Aluminium	2	Lighting	12
Animal Feed	1	Livestock	3
Asbestos	1	Manufacturing	2
Automobile	12	Metal	11
Brick	10	Mining	3
Buildings	34	Oil & Gas	10
Carbon Black	5	Petrochemicals	13
Cement	36	Pharmaceuticals	15
Ceramics & Tiles	13	Polymers	3
Chemicals	44	Power	220
Community	18	Pulp & Paper	42
Cosmetics	1	Refractory	2
Dairy	2	Renewable - All	1
Distillery	25	Rubber	2
Diversified	8	Silica	1
Electronics	3	Solar	44
Fertilisers	20	Sugar	83
FMCG	6	Synthetics	6
Food processing	26	Telecom	1
Forestry	14	Textiles	57
Glass	5	Transport	9
Graphite	1	Tyres	4
Gypsum	1	Waste Management	33
Health Care	1	Water	2
Hydro	179	Wind	510
Industrial Gases	1	Wood	2

**** - All hydro power projects have been counted under hydro sector irrespective of the proponent company sector which has set up the project***

Please note that for purpose of sectoral classification in this analysis, community based organizations, diversified companies and forestry have been categorised as separate sectors.

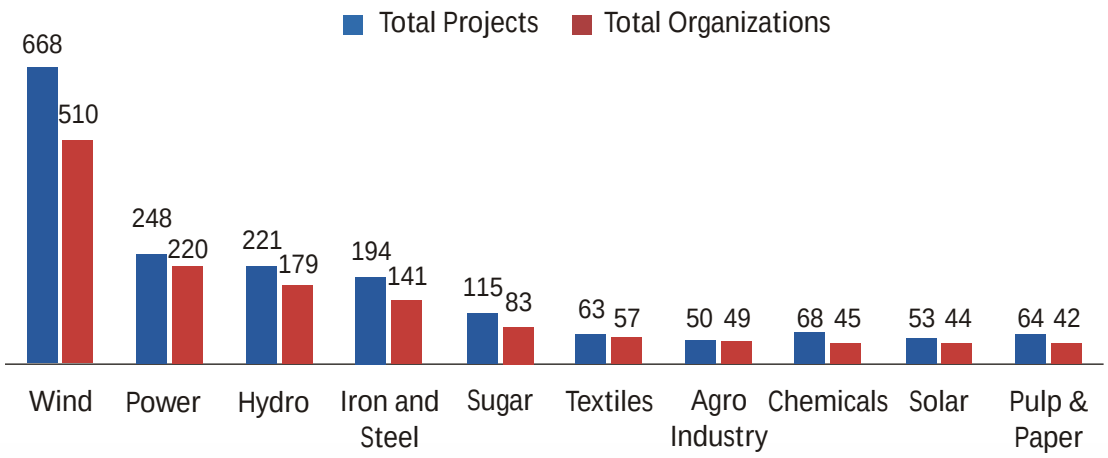
It may be noted that sector here denotes the sector of project activity (the sector where the project is actually taking place and which is claiming the CERs generated) and not necessarily the project proponent sector (core sector of the company/sector investing in the project). For example, if a cement company proposes a MSW project, or a chemical company proposes a wind project, the project category would be considered under MSW and wind sectors, respectively, and not under cement or chemicals. To cite another example, there are wind projects being proposed by hospitality sector, state agencies, chemical industry, paper & pulp industry, etc., but all these projects have been classified under wind sector because the proponent sectors may be different but these are all

It is evident from the table that most of the companies in CDM are in the wind sector (510), followed by Power (220), Hydro (179), Iron & Steel (141) and Sugar (83). Wind CDM projects have been taken up by companies from different proponent sectors such as hospitality, chemical, oil & gas, pulp and paper, state agencies, etc.

D.2. Top 10 sectors in terms of corporate participation

The top 10 sectors in terms of number of companies involved in CDM projects in these sectors are wind, power, hydro, iron & steel, sugar, textiles, agro industry, solar, chemicals and pulp & paper as shown below.

Figure 22: Top 10 sectors with maximum number of companies with CDM projects



Wind: As per FICCI analysis of the Indian CDM portfolio as on June 2012, there are a total of 510 companies that have undertaken 668 wind projects, which is about 28% of the total companies engaged in CDM in India as on June 2013. As per the As per the previous analysis done by FICCI of data of data corresponding to April 2010, this percentage was about 24%. These 510 companies represent a diverse proponent sectors such as cement, pulp & paper, automobiles, electronics, textiles, real estate, chemicals, biofuels, mining, oil, iron & steel, finance companies, poultry, infrastructure, fertilizers, health care, hospitality, consultants, etc. This demonstrates the diversity of sectors that have invested in wind power projects in India, due to a combination of government incentives and CDM. Wind sector projects together account for about 71.5 million CERs upto 2012.

Since April 2010, when the Indian CDM portfolio had 1633 projects, there has been an addition of 722 new projects out of which 275 are wind projects (which is about 38% of the new projects added), i.e. more than one third new projects added in the CDM portfolio from India in the period from April 2010 to June 2010 are in wind power.

Power: The power sector includes units generating power from coal and biomass sources and supplying it to the grid. This sector contributes 248 projects (up by 67 since April 2010) in the Indian CDM portfolio. These projects have been undertaken by 220 companies (up by 54 since April 2010) which exhibit great diversity with respect to scale of operations (large/small units), source of power generation (coal/biomass) and stage of intervention in the complete cycle of power generation/transmission/distribution.

Hydro: Power sector is closely followed by the Hydro sector in terms of number of projects and number of companies involved. 221 CDM projects have been implemented by 179 companies. Compared to this, in April 2010 there were 165 CDM projects in hydropower being implemented by 133 companies . The hydro projects range from small scale to large scale and have mostly been taken up by companies whose proponent sector is power unlike in the case of wind projects where there is a wide range of proponent sectors besides wind companies.

Iron & Steel: Iron & Steel always has been one of the frontrunners in Indian CDM portfolio. Currently 194 projects are being implemented by 141 companies. These companies represent diversity in scale of operations, outputs generated, raw materials used, and technologies employed. Energy efficiency is the largest project category for iron and steel companies which have demonstrated an immense scope for energy efficiency and technology and process upgradation. Since the last analysis of Indian CDM portfolio in April 2010, 44 new projects have been added and 23 new iron and steel companies have entered the CDM pipeline .

Sugar: This sector is dominated by small and unorganized players employing mostly conservative technologies and processes. This sector has 115 projects in the CDM portfolio, 20 more since April 2010. The number of companies has increased by 15 in the same time period to a total of 83 companies. Most of the CDM projects in this sector are in the renewable biomass project category.

Textiles: This sector has 57 companies engaged in 63 projects. Since April 2010, the number of organizations involved in CDM and number of CDM projects implemented by them has increased by 17 (increase by almost 40%) and 20 (increase by almost 47%) respectively.

Agro Industry: FICCI's analysis of April 2010 CDM portfolio had 30 companies implementing 30 agro projects, a ratio of 1:1. Upto June 2012, 19 new companies have entered the CDM with 20 new projects. This shows that the project:company ratio is still 1:1, with new companies into the fray. There is no replication of projects by the companies.

Chemicals: This is the sector with eighth highest number of companies in CDM with 45 companies implementing 68 CDM projects. The spectrum of projects proposed from the sector not only depicts the diversity in the sector in terms of end products/processes/technologies) in the sector but also highlights the range of CDM opportunities in the chemical industry.

Solar: Solar is part of the top 10 list of sectors with 53 projects being implemented by 44 companies. The boost in the number of solar projects is due to the Government of India's National Solar Mission which has encouraged project developers to set up solar plants. These 53 projects have been set up by diverse set of organizations having core operations in various other sectors like automobiles, cement, petroleum, mining, real estate, etc. This shows that not only the pure bred solar companies but also other sectors look at solar as a potential investment for emissions

Pulp & Paper: From the pulp & paper sector, 42 companies are implementing 64 CDM projects. These 64 projects include projects implemented in the industrial process, energy efficiency, fuel switch and renewable biomass categories.

Comparing the above top 10 sectors with maximum number of companies with CDM projects from the analysis of June 2012 with that of the analysis of April 2010 data, we can see introduction of a new sector, Solar, in the list of top 10 sectors. The sector which has fallen out of the top 10 list is the Cement sector which has majority of projects in Energy Efficiency category. In term of engagement of companies some of the key energy intensive sectors such as fertilizers, distillery, etc. have displayed limited participation. Oil and gas sector has all the major players, public and private, engaged in CDM projects, but because of their small numbers, are not able to break into the top 10 list.

D.3. Sector-Wise Distribution of Companies & Projects Under Each Project Category

Table 34 below depicts sector-wise break-up of projects and number of companies under each project category. It is interesting to note that energy intensive sectors such as oil & gas, distillery, fertilizer, petrochemicals, etc. are not amongst the top 10 sectors that have highest representation of companies with CDM projects. However, all the top players in these energy intensive sectors have CDM projects. Hence the overall participation of companies in the these listed sectors seems to be limited.

Table 34: Sector wise distribution of companies and projects under each project category

Sector by	EE		F		FS		IP		MSW		REB		RE		
	P	C	P	C	P	C	P	C	P	C	P	C	P	C	Total Project
Agriculture	4	4													4
Agro Industry	3	3	1	1			5	5			38	35	3	3	50
Aluminium	6	2									1	1			7
Animal Feed											1	1			1
Asbestos											2	1			2
Automobile	9	8			1	1							3	3	13
Brick	15	10													15
Buildings	32	25											1	1	33
Carbon Black	11	5													11
Cement	49	31			7	7					1	1	2	2	59
Ceramics & Tiles	3	1			16	11					3	2	2	2	24
Chemicals	28	20			16	15	9	9			11	9	4	4	68
Cleantech	1	1									2	1			3
Community	20	7			1	1					13	10			34
Cosmetics											1	1			1
Dairy											2	2			2
Distillery	4	4					8	8			15	13			27
Diversified	2	2			3	3					3	3	1	1	9
Electronics	4	3			5	1									9
Fertilisers	17	9			6	5	8	6	1	1	3	3	4	1	39
FMCG	1	1			1	1	2	2			1	1	1	1	6
Food processing					3	3	4	4			23	17	1	1	31
Forestry			14	14											14
Glass	5	4			2	2									7
Graphite	1	1													1

Sector by	EE		F		FS		IP		MSW		REB		RE		
	P	C	P	C	P	C	P	C	P	C	P	C	P	C	Total Project
Gypsum	1	1													1
Health Care											1	1			1
Hydro													221	179	221
Industrial Gases	1	1													1
Infrastructure	4	4									1	1			5
Iron and Steel	182	129			4	4	2	2			6	6			194
Lighting	61	11			1	1									62
Livestock											3	3			3
Metal	5	3			1	1	4	4			1	1	2	2	13
Mining	1	1					1	1					3	2	5
Oil & Gas	30	10			2	2	14	2			1	1			47
Petrochemicals	13	4			2	2	2	2			4	4			21
Pharmaceuticals	6	4			3	3					8	7	2	1	19
Polymers	2	2									1	1			3
Power	71	58			19	18	2	2	3	3	153	137			248
Pulp & Paper	23	14			2	2	11	11			28	25			64
Refractory	1	1			1	1									2
Renewable - All													1	1	1
Rubber					1	1	1	1			1	1			3
Silica					1	1									1
Solar													53	44	53
Sugar	7	7					7	7			101	69			115
Synthetics	4	4									3	2			7
Telecom	1	1													1
Textiles	15	13			7	7					33	26	8	7	63
Transport	7	6			1	1					1	1			9
Tyres	3	3									2	2			5
Waste Management						4	2	38	27	3	3			45	
Water	2	2													2
Wind													668	510	668
Wood											2	2			2
Grand Total	655	420	15	15	106	94	84	68	42	31	473	394	980	765	2355

P – Number of Projects
C – Number of Companies
EE – Energy Efficiency
For – Forestry
FS-Fuel Switch
IP-Industrial Process
MSW-Municipal Solid Waste
REB-Renewable Energy-Biomass
RE-Renewable Energy

A closer look at the table throws up some interesting observations about the replication of projects with by companies and across an entire sector as a whole. The manner in which various sectors have adopted CDM shows variations. While some sectors have taken up CDM projects in a big way and have replicated projects under the same project categories across different companies, few others have shown a multiplier effect within the same company. i.e. the same company has taken up multiple projects, hence showing a limited representation in terms of number of companies but a fairly good number of CDM projects from the sector.

such sector is the Oil & Gas sector where 10 companies have implemented 47 CDM projects. Of these 47 projects, 30 are energy efficiency projects taken up by 10 companies and 14 industrial process related CDM projects taken up by only 2 companies. Therefore although the oil and gas sector has huge potential, the overall participation of the corporate sector is limited to a few major companies. In the fertilizer sector, 20 companies have 39 projects, with 17 projects alone in Energy Efficiency being implemented by 9 companies. This is one of the few sectors which have projects in all the categories except Forestry, which demonstrates that the fertilizer has explored different types of CDM projects.. Lighting is another sector where only 12 companies have implemented 62 CDM projects. There are some companies implementing multiple small projects where each is registered for CDM.

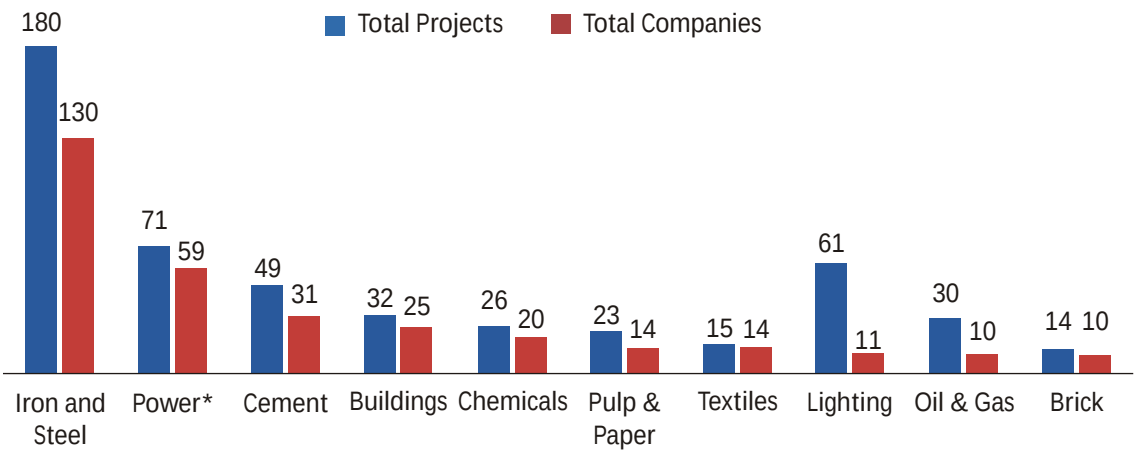
Contrary to the above sectors like agro industry (P50/C49), automobile (P13/C12), distillery (P27/C26), have almost 1:1 ratio of the number of projects and number of companies. Even the power sector has almost 1:1 ratio with 248 projects being implemented by 220 companies. This indicates that though the participation of companies/project developers is increasing in CDM, replication of projects by the same company is limited.

D.4. Dominant Sectors in terms of corporate participation under seven project categories

Further analysis of the above table also indicates the dominance of different sectors under each project category. Under each project category, there are certain sectors that have taken a lead in terms of number of projects as well as corporate sector participation. The following figures show a break up of projects and number of companies for the dominant sectors under energy efficiency, renewable energy, renewable energy (biomass), fuel switching and industrial process.

D.4.1 Energy Efficiency

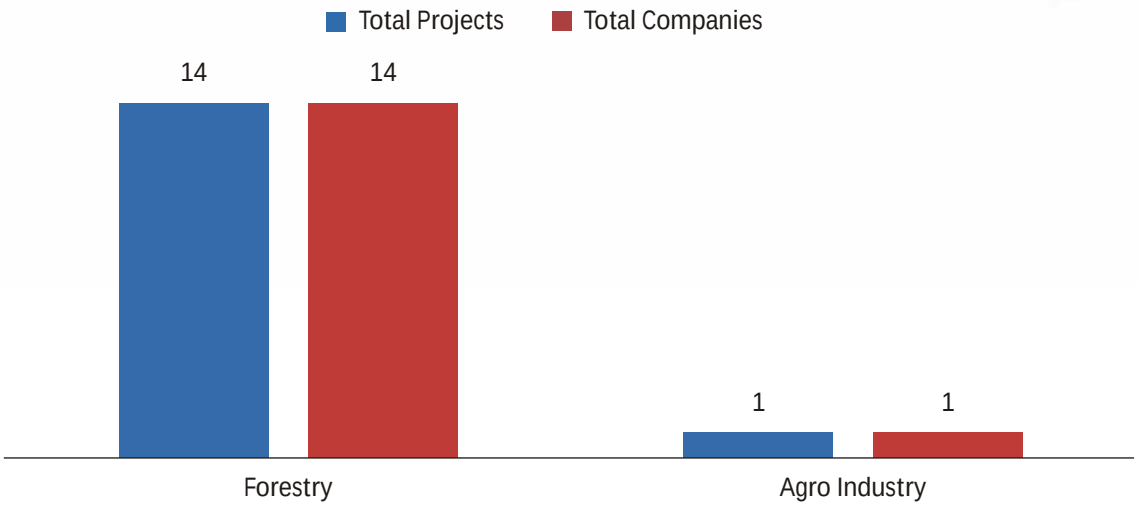
Figure 23: Sectors having highest number of Energy Efficiency CDM projects



The dominant sectors under Energy Efficiency are iron & steel, power, cement, buildings, chemicals, pulp & paper, textiles, lighting, oil & gas and brick. Oil and gas has a company to project ratio of 1:3 and lighting has a ratio of almost 1:6 indicating that the same companies have taken up multiple projects. Textiles has a project to company ratio of 1:1 showing that companies in these sectors are engaging in CDM but not replicating projects, while rest show some replication of the projects by companies.

D.4.2 Forestry

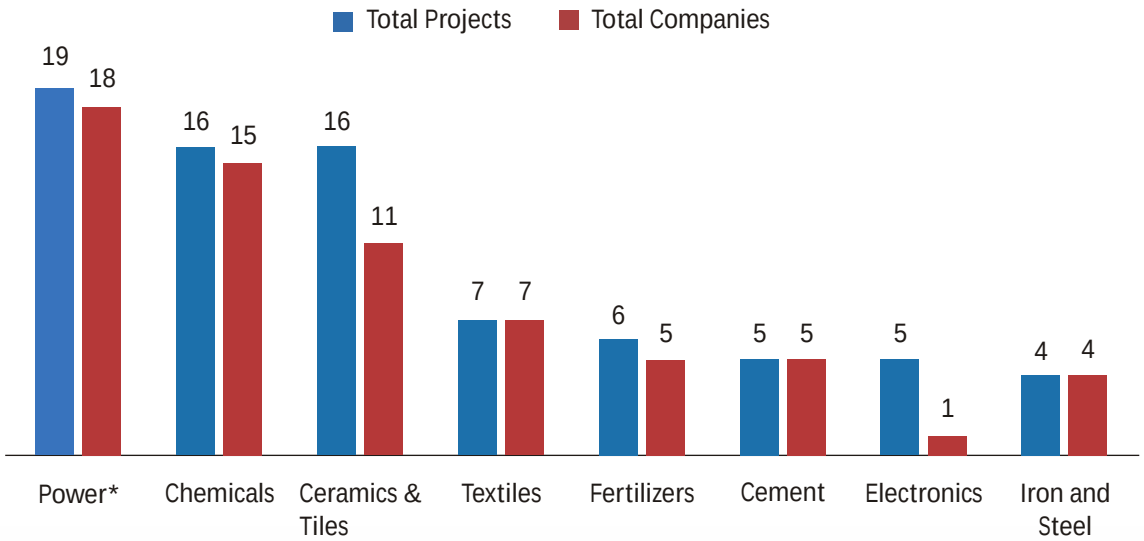
Figure 24: Sectors having highest number of Forestry CDM projects



Forestry has just 15 projects under CDM which are implemented by 15 different organizations, hence the company to project ratio is 1:1. As the measurement and calculations of emission reduction is very difficult for such projects and they usually do not have any economic value in terms of profits, companies do not like to invest money in this sector.

D.4.3. Fuel Switch

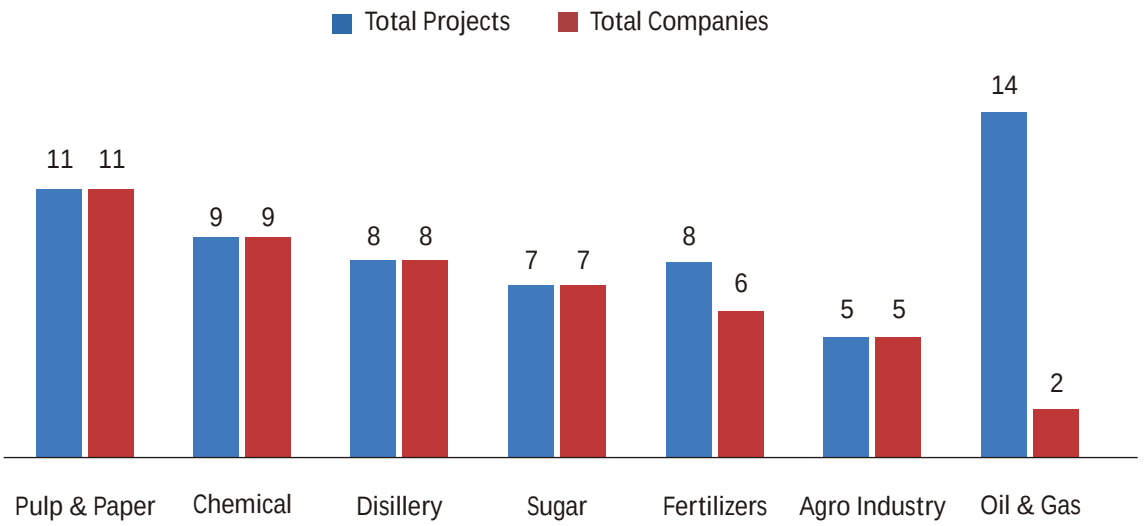
Figure 25: Sectors having highest number of Fuel Switch CDM Projects



Power sector dominates the Fuel Switch project type with 18 companies indulging in 19 fuel switch CDM projects (ratio 1:1). Companies from Chemical, Ceramics & Tiles, Textiles, Fertilizers and Electronics have also contributed to the Fuel Switch projects portfolio as shown in the graph above. Only one Electronics company has multiple CDM projects (five) under Fuel Switch. This shows that there is scope for such projects in the non-conventional sectors too.

D.4.4. Industrial Process

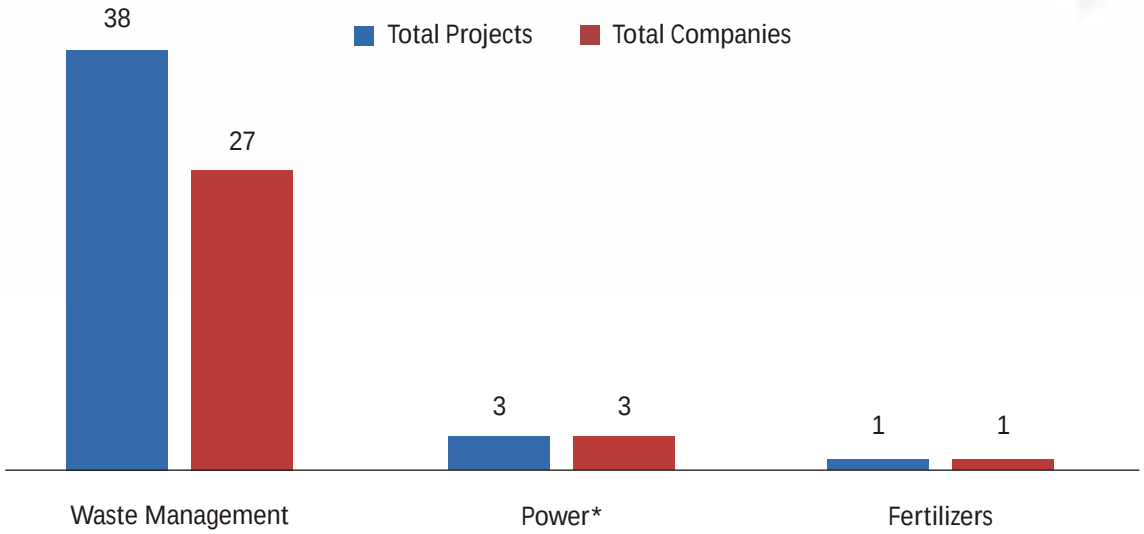
Figure 26: Sectors having highest number of Industrial Process CDM Projects



Pulp and paper is the dominant project type here followed by chemicals, distillery, fertilizers, sugar, and agro industry. It is interesting to note that all dominant sectors are not replicating projects and all sectors under this category as shown in figure 26 above have one project per company except Fertilizers and Oil & Gas. It should also be noted that oil & gas sector has only 2 companies involved in 14 industrial process related projects, with project to company ratio being 7:1.

D.4.5. Municipal Solid Waste

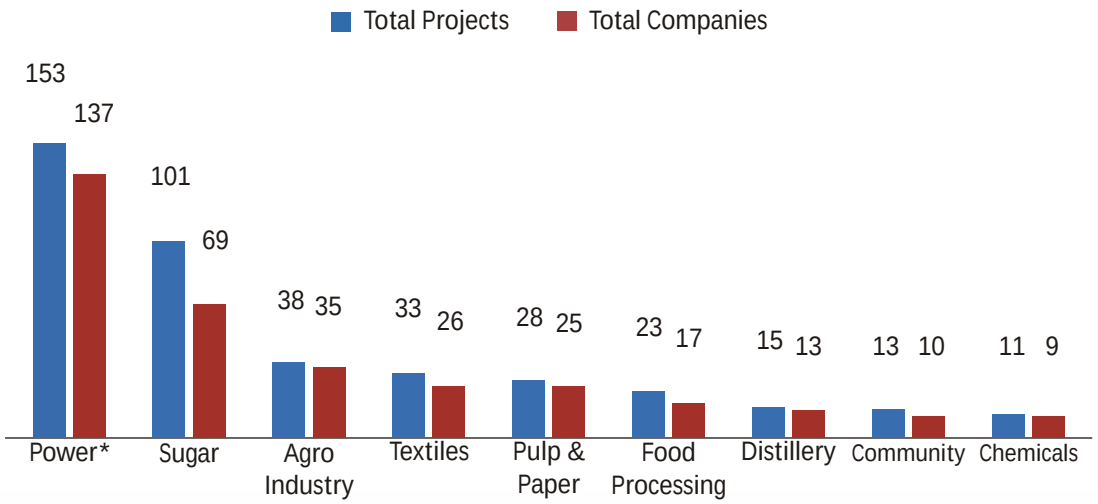
Figure 27: Sectors having highest number of MSW CDM Projects



MSW category is dominated by Waste Management companies with 27 companies having 38 projects. This being a very specific category, it is very difficult for companies of other sectors to have projects related to MSW, although power and fertilizers have 3 & 1 projects respectively with a 1:1 ratio.

D.4.6. Renewable Energy (Biomass)

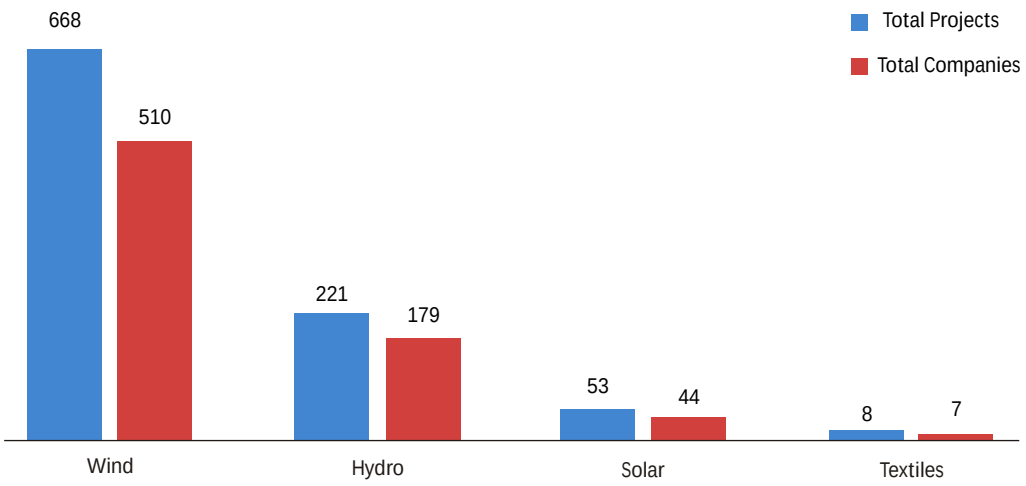
Figure 28: Sectors having highest number of RE (B) CDM Projects



The most dominant sector in terms of projects as well as number of companies involved under this category is power with 153 projects by 137 companies. This is followed by 101 projects by 69 sugar companies. Agro industry has almost a 1:1 project company ratio with 38 projects by 35 companies. This is closely followed by 33 projects by 26 textile companies and 28 projects by 25 paper & pulp companies. The other dominant sectors in renewable biomass are food processing, distillery, community and chemicals sectors. Although a considerable number of companies from various sectors are engaging in RE(B) projects, the replication of projects by the same company is limited.

D.4.7. Renewable Energy

Figure 29: Sectors having highest number of RE CDM Projects

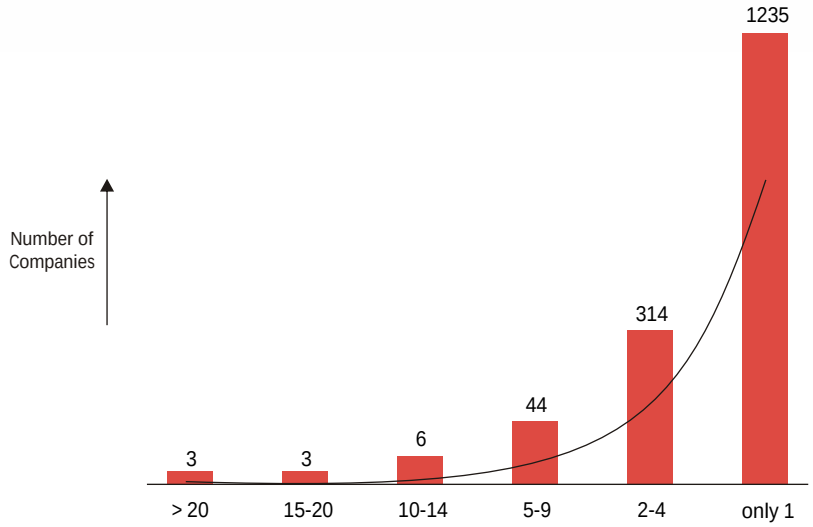


Renewable Energy category is dominated by three major renewable sources - wind, hydro and solar. Wind is the most dominant sector not only under this category but in the overall Indian CDM portfolio with 668 projects being set up by 510 companies. Wind projects have been taken up by not only wind companies but also by companies from a wide range of other proponent sectors including hospitality, buildings, cement, etc. Hydro projects are the second in line, 221 projects by 179 companies, followed by solar CDM projects, 53 projects by 44 companies which are yet to take off in a comparable way despite the huge potential that exists in this area. Textile sector is also mentioned in this analysis to show the vast gap between the implementation of renewable projects for captive consumption by other sectors. This points out the immense potential for all other sectors to invest in renewable energy projects for their own consumption, there by being energy sufficient.

D.5. Corporate Sector Engagement by Number of Projects per Company

An analysis of corporate sector engagement in CDM in terms of number of projects per company throws up interesting facts and figures that shed light on the nature and extent of participation by different companies and sectors. Figure 5 depicts the number of projects per company within various ranges starting from over 20 projects per company to only 1 project per company.

Figure 30: Number of companies having multiple projects



Companies with > 20 CDM projects

There are 3 companies with over 20 CDM projects in the CDM portfolio, namely, Banyan Environmental Innovations Private Limited, Enercon India Limited and Oil & Natural Gas Corporation (ONGC), with 60, 29 and 21 projects, respectively.

Table 35: Companies with more than 20 CDM projects

Company Name	Number of Projecs	EE	IP	RE	CERs upto (2012) (in million)
Banyan Environmental Innovations Private Limited	60	60			12.00
Enercon (India) Limited	29			29	7.97
ONGC Ltd	21	7	13	1	6.09
Total	110	67	13	30	26.65

It is interesting to note that Banyan Environmental Innovation Private Limited has maximum number of projects (60) and all are for Energy Efficiency. Enercon, the second highest, has 29 projects all in renewable energy segment (wind projects). ONGC, India's biggest oil & gas company, the third highest in terms of number of projects has projects in Industrial Process (13), Energy Efficiency (7) and Renewable Energy (1) categories. Although these three companies have the highest number of projects per company, together the CER potential is only 26.65 million, which shows that these are primarily small scale projects.

Companies with 15-20 projects

There are 3 companies in India which have between 15-20 CDM projects - Thermax Sustainable Energy Solutions Limited, ITC Limited and Reliance Industries Limited with 19, 18 and 15 projects, respectively.

Table 36: Companies with 15 to 20 CDM projects

Companies	Total Projects	EE	For	FS	IP	RE(B)	RE	CERs upto 2012 (in million)
Thermax Sustainable Energy Solutions Ltd	19	1				18		4.52
ITC	18	10	1	1	2	2	2	4.11
Reliance Industries Limited	15	11		1		1	2	3.31
Total	52	22	1	2	2	21	4	11.94

Out of the 19 projects of Thermax, 18 projects are approved as PoA forpromotion of Biomass based Heat Generation Systems in India. ITC has 18 projects spread across all categories except MSW, with majority of projects in Energy Efficiency (10). Reliance Industries Limited has 15 projects out of which 11 are in Energy Efficiency.

Companies with 10-14 projects

6 companies have between 10-14 CDM projects - Enking International (13), Indian Oil Corporation Limited (13), Vish Wind Infrastructure LLP (12), Gensol Consultants Private Limited (11), Tata Steel Limited (11), and Steel Authority of India Limited (10).

Table 37: Companies with 10 to 14 CDM projects

Companies	Total Projects	EE	IP	RE	CERs upto (2012) (in million)
EnKing International	13			13	0.21
Indian Oil Corporation Limited	13	11	1	1	0.81
Vish Wind Infrastructure LLP	12			12	0.41
Gensol Consultants Pvt. Ltd.	11			11	0.62
Tata Steel Limited	11	11			11.34
Steel Authority of India Limited.	10	10			7.89
Total	70	32	1	37	21.68

It is interesting to note that though Tata Steel Limited has 11 projects, the estimated CER potential amounts to 11.34 million, the second highest in this band (10-14) and above, highest being Banyan Environmental Innovations Pvt Ltd. with 12 million CERs from 60 projects. In the previous band of 15-20 projects, the three companies together have CER potential of 11.94 million from 52 projects, whereas Tata Steel has almost equivalent CER potential from 11 projects. IOCL has projects in three categories, whereas all the other companies in this band have projects under one category only. IOCL is the only company in this band to have an industrial process related project.

Companies with 5-9 projects

44 companies figure within the range of 5-9 projects per company representing diverse sectors as well as diverse project types within a company. The table below provides a list of these companies and the number of projects they have under each project category.

Table 38: Companies with 5 to 9 CDM projects

Sr No	Companies	Total Projects	EE	For	FS	IP	MSW	REB	RE	CERs upto 2012 (in millions)
1	Abi Energy Consultancy Services Private Limited	9							9	0.16
2	Essar Steel Limited (ESTL)	9	8		1					6.90
3	Anu Solar Thermal Private Limited	8							8	0.66
4	Bajaj Hindusthan Ltd	8						8		1.42
5	Birla Corporation Ltd.	8	8							2.99
6	DSCL Energy Services Company Limited	8						6	2	N/A

Sr No	Companies	Total Projects	EE	For	FS	IP	MSW	REB	RE	CERs upto 2012 (in millions)
1	Abi Energy Consultancy Services Private Limited	9							9	0.16
2	Essar Steel Limited (ESTL)	9	8		1					6.90
3	Anu Solar Thermal Private Limited	8							8	0.66
4	Bajaj Hindusthan Ltd	8						8		1.42
5	Birla Corporation Ltd.	8	8							2.99
6	DSCL Energy Services Company Limited	8						6	2	N/A
7	G K Energy Marketers Pvt Ltd.	8	5						3	0.22
8	Hanjer Biotech Energies (P) Ltd.	8					8			3.01
9	NTPC Limited	8	3						5	12.56
10	Resurge Energy Private Limited	8							8	1.06
11	Vaayu (India) Power Corporation Private Limited	8							8	0.68
12	Indo Gulf Fertilisers (IGF)	7	6			1				0.59
13	MITCON Consultancy Services Limited	7							7	0.13
14	MPPL Renewable Energy Private Limited	7						7		2.41
15	Samtel Colour Limited	7	2		5					0.90
16	Tata Chemical Limited	7	5			1		1		0.45
17	Bhoruka Power Corporation Limited	6							6	0.74
18	Chhattisgarh Tribal Development Programme	6		1				2	3	0.34
19	First Climate (India) Pvt Ltd	6						4	2	N/A
20	Grasim Industries Limited	6	4		2					0.51
21	Gujarat Alkalies & Chemical Limited	6	2		2				2	1.58
22	Gujarat State Fertilizers and Chemicals Limited	6	1		1				4	0.59
23	H&R Johnson (India) Limited	6	3		1			2		0.53
24	Hindustan Zinc Limited	6	3			1			2	1.72
25	K.S. Oils Limited	6							6	0.36
26	MSPL Limited	6			1				5	2.64
27	NEG MICON India (Pvt) Ltd	6							6	4.44
28	Rajasthan State Mines & Minerals Limited	6	1						5	0.65
29	Rashtriya Ispat Nigam Limited (RINL)	6	6							0.46

Sr No	Companies	Total Projects	EE	For	FS	IP	MSW	REB	RE	CERs upto 2012 (in millions)
30	Tamil Nadu Electricity Board	6							6	0.26
31	Adani Power Ltd	5	5							6.11
32	CLP Wind Farms India Private Limited	5							5	0.71
33	Dhampur Sugar Mills Limited	5						5		2.65
34	Electrosteel Integrated Ltd	5	4			1				1.74
35	Gangadhar Narsingdas Agrawal Group	5							5	0.46
36	Green Planet Energy Private Limited (GPEPL)	5						5		0.05
37	Gujarat Fluorochemicals Limited	5				1			4	18.60
38	Mawana Sugars Limited	5						5		1.23
39	Powerica Ltd	5							5	0.32
40	REI Agro Limited	5							5	0.52
41	Senergy Global Private Limited	5							5	0.72
42	Shalivahana Green Energy Limited	5					1	2	2	0.53
43	Shree Cement Limited	5	4					1		2.36
44	Sun-n-Sand Hotels Pvt Ltd	5							5	0.31

Companies with 2-4 projects

This category is represented by 315 companies accounting for 739 CDM projects in the total portfolio of 2355 projects. The table below gives the break-up of number of projects in this band (companies with 2-4 projects) based on their Project category.

Table 39: Total Companies with 2-4 CDM projects in the seven categories

Project Category	Number of Projects	Number of Companies
Renewable	309	165
Energy Efficiency	219	114
Renewable Biomass	130	71
Fuel Switch	36	29
Industrial Process	31	25
MSW	12	8
Forestry	2	2

As can be seen from Table 37, majority of the projects are in Renewable Energy (309) and Energy Efficiency (219). The next category of projects where the companies have CDM projects is the Biomass project category (128). Forestry has only 2 projects by 2 companies. Organizations are reluctant to invest in Forestry projects due to lack of clear guidelines and manuals on forestry, nationally approved methods for development of baselines, measurement, monitoring, etc. and high transaction costs, with respect to an average scale of operation of these projects. The total CERs generated by these 737 projects are 248.6 million upto 2012.

Companies with only 1 project

1233 companies out of total 1604 companies in the Indian CDM portfolio representing about 77% of the total have implemented only one CDM project. This indicates that although the engagement of Indian industry in CDM projects is increasing constantly, companies have shied away from taking up multiple projects. The table below gives the break-up of the number of projects by these companies in the seven project categories.

Table 40: Number of Companies with only one CDM project in the seven categories

Project Category	Number of Projects
Energy Efficiency	255
Forestry	11
Fuel Switch	54
Industrial Process	34
MSW	26
Renewable	551
Renewable Biomass	302

The table also shows that a large number of companies have gone in for renewable energy, renewable biomass and energy efficiency projects, which demonstrates the spread of such projects across sectors of the economy. The total CERs generated by the companies having only one project is 7.84 million upto 2012.

D.6. Analysis of Corporate Sector Participation in the Indian CDM Project Portfolio vis-a-vis the Economic Times Top 500 Listing (2012)

The Economic Times has published a ranking of Top 500 Indian corporates in 2012 based on the sumtotal of their incomes. FICCI has made this analysis to understand theextent of engagement of the top Indian companies in the CDM. The aim is to gauge the level ofinterest that CDM as a flexibility mechanism to facilitate GHG reduction efforts, has been able togenerate among the top ranked corporates in the country. This section presents ananalysis of the Indian project portfolio vis-à-vis the Economic Times Rankings.

The Indian corporate sector has realized that the CDM is a relatively cost-effective and efficient instrument for GHG mitigation. The vigour with which Indian companies have participated in the Clean Development Mechanism demonstrated by India's impressive project portfolio further reinforces this statement. 1604 Indian companies are contributing to the Indian CDM project pipeline (as of June 2012). These 1604 companies represent over 50 sectors, with diverse scale and size of operations, diverse outputs, geographical priorities, and annual turnovers. In terms of number of projects, some of the leading sectors include power (all power generating units supplying to grid, including renewable biomass), iron & steel, sugar, chemicals, pulp & paper, textiles, lighting, and cement. A detailed analysis of the number of projects per sector and number of companies per sector is presented in the later sections of this chapter.

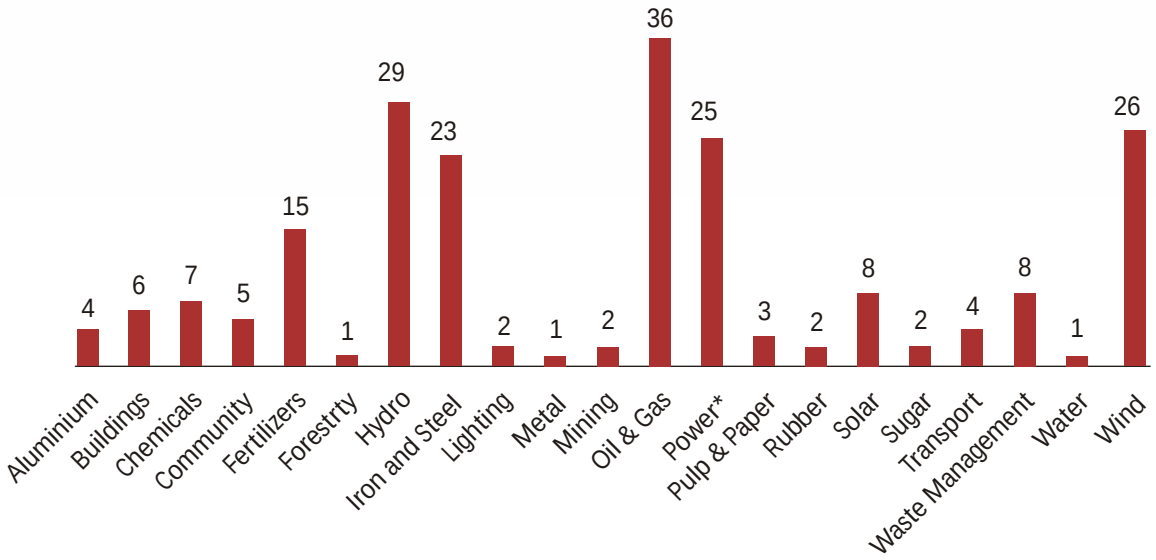
Table 41: Break-up of number of companies, sectors, projects in the Indian CDM project pipeline as of June 2012

	Number of Companies	Number of Sectors	Number of Projects
Total Pipeline	1604	55	2355
ET Top 500	171	33	449
ET Top 50	23	16	136

171 companies from ET 500 list have 449 projects spread across 33 sectors, which shows that the top companies from 33 out of 55 sectors have explored the CDM. When we look at the top 50 companies in the ET 500, the project to company ratio becomes quite high (5.9:1), which demonstrates the multiplicity of CDM projects in the top echelons of the corporate sector.

FICCI's analysis of the current project pipeline reveals that 83 out of the total 1604 companies are public sector entities (government organizations). Figure below illustrates a break-up of CDM projects from public sector entities.

Figure 31: Break-up of CDM projects from public sector entities



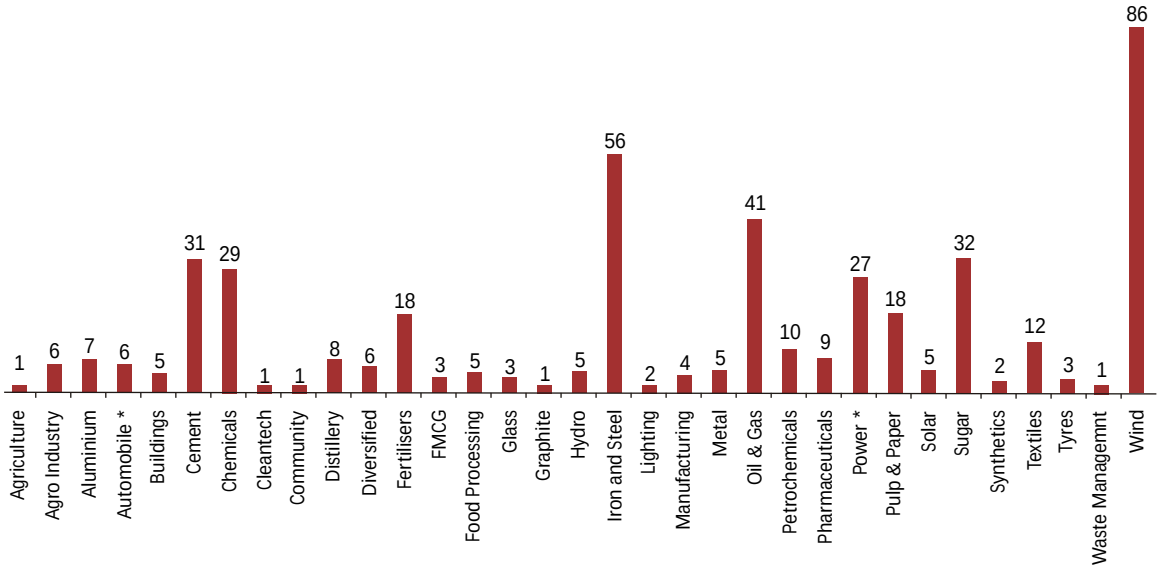
The profiles of PSEs involved in CDM includes power generating units, power transmission and distribution units, electricity boards, water supply and sewerage, renewable energy development agencies, municipal corporations, public sector transport corporations, and public sector units in sectors like oil & gas, steel, newsprint, paper, fertilizer, etc. These 83 public sector entities account for a total of 210 projects which is 9% of the total Indian projects.

An analysis of the top companies in the ET rankings with respect to the CDM has some interesting revelations. Out of the top 500 companies in the ET ranking, 171 corporates (34% of the top 500 list, 10 % of the total of 1604 companies contributing to the Indian project pipeline) are engaged in CDM, accounting for 449 CDM projects. Thus, 10% of the companies (out of 1604) account for over 19% of the total CDM projects from India. These 171 companies from the top 500 list represent industrial sectors like iron & steel, power, cement, chemicals, etc. Out of the total 83 Indian public sector entities engaged in CDM, 18 entities feature in the ET 500.

D.6.1. Sectoral Representation of CDM Projects from Top 500 Listing

Figure below illustrates a sector-wise break-up of companies in the CDM pipeline. As is evident from the graph, wind, iron & steel, oil & gas, sugar, cement, chemicals and power have the most number of companies engaged in CDM. It is worth noting that the 171 companies with CDM projects featuring in the ET 500 represent 33 sectors (the total Indian pipeline has representation of over 50 sectors).

Figure 32: Sector-wise break-up of companies in the CDM pipeline from ET Top 500

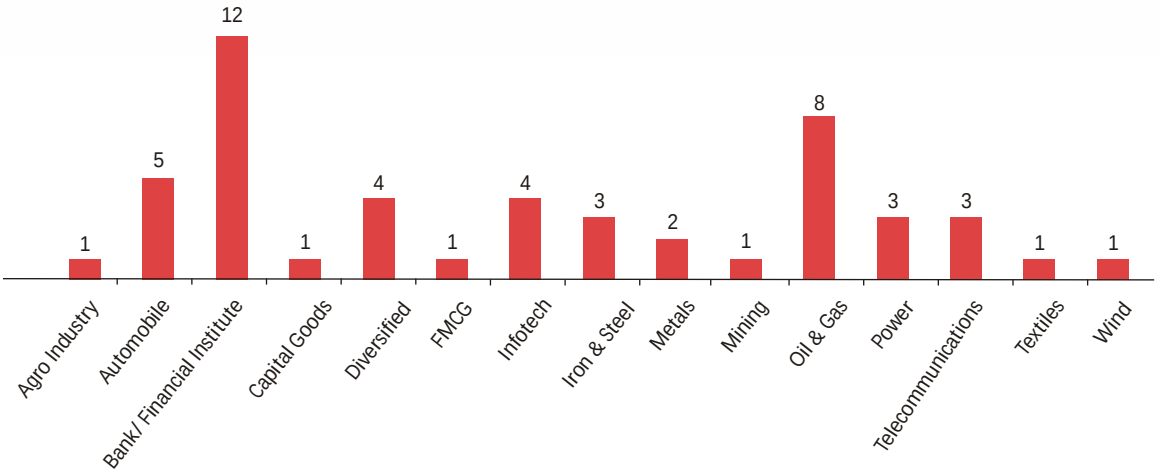


Out of 171 companies in the ET Top 500 with CDM projects, maximum number of companies are engaged in wind projects (86), followed by 56 companies from iron & steel, and 41 from oil & gas sectors. There are 32 and 31 companies from sugar and cement, respectively. This shows that the top companies of energy intensive sectors such as iron and steel, oil and gas, and cement have engaged in CDM, demonstrating the consciousness of top companies towards energy efficiency and GHG mitigation initiatives.

D.6.2. Analysis of companies in ET Top 50 Listing with CDM Projects

Figure below depicts a break-up of sectors and number of companies per sector featuring in the ET top 50 list. The graph clearly shows that Banks/Financial Institutions (12), oil & gas (8), Automobile (5), Power (4) and Infotech (4) are the leading sectors with maximum number of companies figuring in the top 50 list.

Figure 33: Break-up of sectors and number of companies per sector in ET Top 50

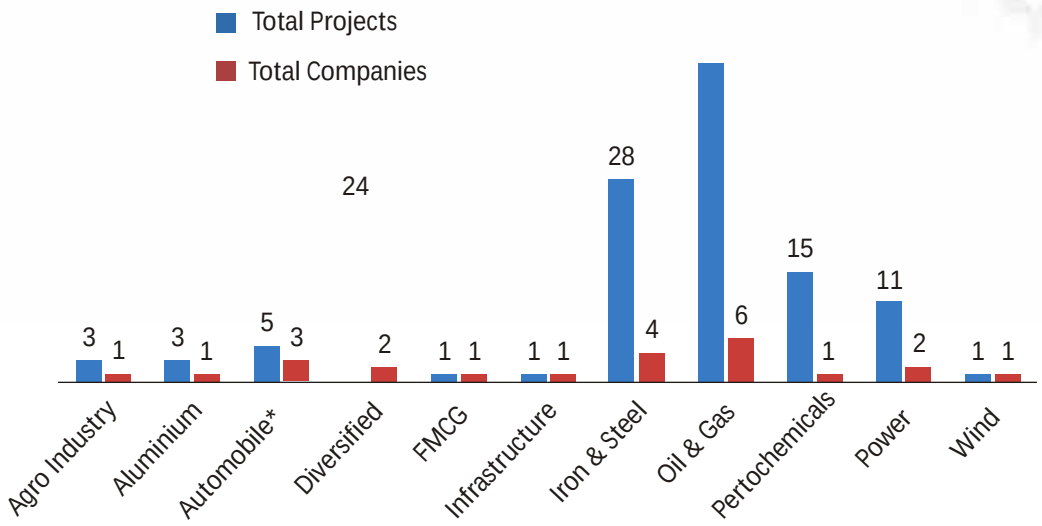


Among the Top 50 in the ET list, 23 companies have CDM projects in the current pipeline. These companies represent industry sectors such as oil & gas and petrochemicals, iron & steel, power, metals, agro industry, automobile, FMCG, pulp & paper, textiles, wind, chemicals, lighting, buildings and solar. These 23 companies together have 136 CDM projects, which accounts for 30% of total projects from top 500 and 5% of total projects in pipeline, out of which 46 are registered with the UNFCCC.

The Figure below depicts a break-up of different industrial sectors appearing in the Top 50 ET list vis-a-vis the number of companies under each sector and the number of CDM projects proposed by each of these companies. As depicted, the oil & gas sector which has 6 companies from the Top 50 list (in fact these companies appear in Top 25 list, with 4 in Top 10) participating in the carbon market, has 44 projects in the pipeline of which 16 are registered.

The next single major sector, iron & steel, has 4 companies from the Top 50 list participating in the pipeline which has proposed 28 projects, of which only 3 have been registered. There are 5 companies from automobiles sector in the Top 50 list out of which 3 companies have implemented CDM projects.

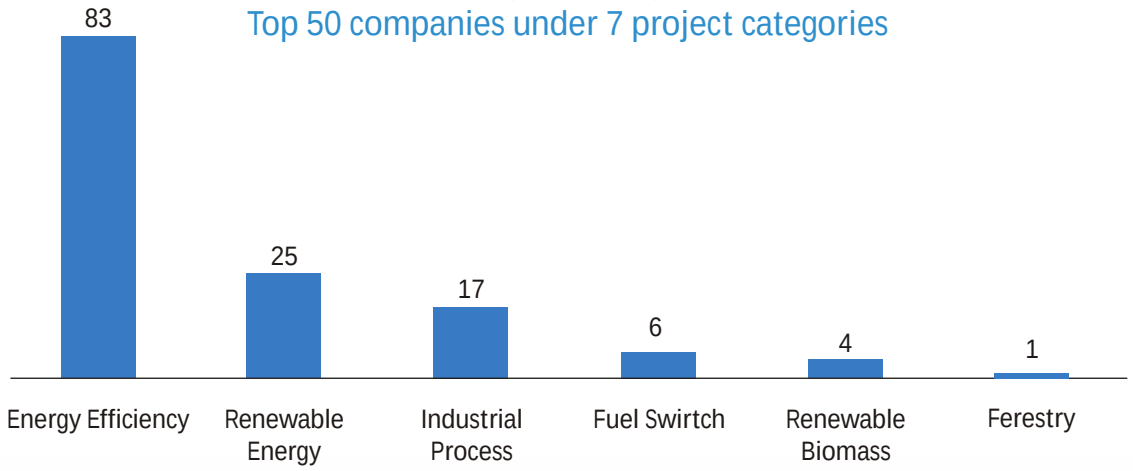
Figure 34: Break-up of sectors with CDM projects in ET Top 50 vis-a-vis number of companies



The 136 projects being undertaken by these top 23 companies (from the ET 50 list), account for around 89 million CERs upto 2012. The iron & steel sector accounts for a total of around 36 million CERs, and oil & gas sector accounts for 27 million CERs upto 2012.

The figure below shows the break-up of the CDM projects from ET 50 companies under different CDM project categories. An analysis of the category-wise breakup of the total 136 projects from ET top 50 companies shows that Energy Efficiency is the dominant category, followed by Renewable Energy (Wind, Solar, Hydro), and Industrial Process. There are no projects from MSW category from ET 50 companies.

Figure 35: Break-up of CDM projects from ET Top 50 companies under 7 project categories



D.7. Participation of Public Sector Entities in the Indian CDM Portfolio

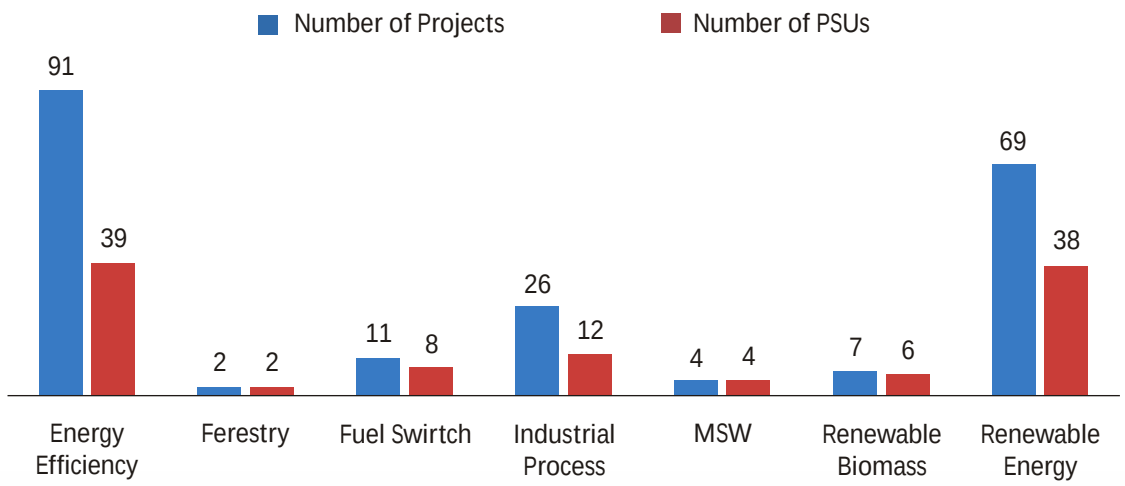
Out of the total 1604 companies that are engaged in CDM projects in India, 83 are Public Sector Entities (PSEs) representing Public Sector Units (PSUs) of various sectors such as oil & gas, iron & steel, power, fertilizers, mining, etc; Municipal Corporations of states, transport and infrastructure departments of various states, state electricity boards, power corporations, and water supply and sewerage boards.

PSEs account for 210 CDM projects representing 21 sectors (by project activity). These 210 projects represent 9% of the total CDM portfolio. PSUs such as ONGC (Oil & Gas), SAIL (Iron & Steel), IOCL (Oil & Gas) are among the top runners in the overall CDM portfolio in terms of number of CDM projects per company, as is evident from the previous chapter.

Delhi Metro Rail Corporation (DMRC) project was the world's first transport sector project to be registered under the UNFCCC. Then the Indian Railways entered the Indian CDM portfolio and now Bangalore Metropolitan Transport Corporation (BMTC) and Indore City Transport Services Limited (ICTSL) have developed CDM projects. This shows that state transport bodies are coming up with innovative projects to reduce carbon emissions.

Out of these 83 PSEs, 39 are involved in Energy Efficiency Projects and another 38 in Renewable Energy Projects. These companies represent sectors such as power, transport, oil & gas, hydro, mining, metals, etc.

Figure 36: Number of PSEs in the seven project categories with number of projects



D.7.1. Public Sector Entities with CDM projects among Top 500 Companies

The table below enlists the top ranking PSEs that have CDM projects and also the number of projects per company. 18 PSUs among the top 500 companies have 92 projects amounting to about 36.42 million CERs.

Table 42: List of PSEs in the list of ET Top 500 companies (2012) with the number of CDM projects and estimated CERs

Sr. No	PSU	Sector	Projects	CERs(upto 2012) in millions
1	ONGC Ltd	Oil & Gas	21	6.09
2	Indian Oil Corporation Limited	Oil & Gas	13	0.81
3	Steel Authority of India Limited	Iron & Steel	10	7.89
4	NTPC Limited	Power	8	12.56
5	Gujarat Alkalies & Chemical Limited	Chemicals	6	1.58
6	Gujarat State Fertilizers and Chemicals Limited	Fertilizers	6	0.59
7	Gujarat Narmada Valley Fertilizers Company Limited	Fertilizers	4	1.73
8	National Aluminium Company Limited (NALCO)	Aluminium	4	0.13
9	Rural Electrification Corporation Limited (REC)	Power	4	0.27
10	Chennai Petroleum Corporation Limited	Oil & Gas	3	0.66
11	Rashtriya Chemicals & Fertilizers Limited	Fertilizers	3	3.04
12	Bharat Electronics Limited (BEL)	Electronics	2	0.05
13	Gujarat Mineral Development Corporation Limited	Mining	2	0.17
14	Hindustan Petroleum Corporation Limited (HPCL)	Oil & Gas	2	0.32
15	Bharat Petroleum Corporation Limited (BPCL)	Oil & Gas	1	0.04
16	MMTC Limited	Trading	1	0.18
17	National Fertilizer Limited	Fertilizers	1	0.26
18	NMDC Limited	Mining	1	0.05
	Grand Total		92	36.42

All the oil & gas PSUs which are the top ranking companies of the industry have engaged in CDM. ONGC has led the way with 21 projects. Sectors represented here are oil & gas, power, fertilizers, mining, electronics, iron & steel, aluminium, and trading. MMTC which is a trading PSU is a new entry into the field of CDM projects with one grid connected wind power project established in Karnataka.

In terms of CERs, NTPC with 8 projects lined up has maximum CERs - 12.56 million, followed by SAIL (7.89 million) and ONGC (6.09). the country's largest PSUs have taken a leap in addressing climate change mitigation, and adoption of energy efficiency and clean energy initiatives.



Industry's Voice for Policy Change

About FICCI

Established in 1927, FICCI is one of the largest and oldest apex business organizations in India. FICCI's history is closely interwoven with India's struggle for independence, industrialization and emergence as one of the most rapidly growing global economies. FICCI has contributed to this historical process by encouraging debate, articulating the private sector's views and influencing policy.

A not-for-profit organization, FICCI is the voice of India's business and industry.

FICCI draws its membership from the corporate sector, both private and public, including MNCs; FICCI enjoys an indirect membership of over 2,50,000 companies from various regional chambers of commerce.

FICCI provides a platform for sector specific consensus building and networking and is the first port of call for Indian industry and the international business community.

Our Vision

To be the thought leader for industry, its voice for policy change and its guardian for effective implementation.

Our Mission

To carry forward our initiatives in support of rapid, inclusive and sustainable growth that encompasses health, education, livelihood, governance and skill development.

To enhance the efficiency and global competitiveness of the Indian industry and to expand business opportunities both in domestic and foreign markets through a range of specialized services and global linkages.