

THEME: DIRECT, INDIRECT, AND INDUCED JOB CREATION
OCL: Indirect Employment Effects In The Cement Supply Chain

IFC granted a loan to partly finance Orissa Cement Limited (OCL), an Indian cement manufacturer, to expand its capacity and set up a greenfield plant. This created about 300 direct jobs and 7,200 indirect jobs over four years, with two-thirds in the distribution network. An estimated 1.5 direct jobs and 40 indirect jobs were created for every \$1 million in project costs. Nearly 70 percent were unskilled. Almost all the jobs were for men.

IFC's investment

In 2007 IFC partly financed OCL expansion and greenfield plant plan (\$196 million in total) with a \$50 million loan. Subsequently, an additional clinker line of an annual capacity of 1.2 million MTs (additional cement capacity of 0.8 million MTs) was installed in the cement plant in Rajgangpur, a small town in rural Orissa and a greenfield cement grinding unit with an annual capacity of 1.1 million MT was set up in Kapilas, just outside Bhubaneswar, the state capital.¹ Bhubaneswar became operational and achieved 100 percent capacity use in 2008. This total incremental capacity addition of 1.9 million MT forms the basis for estimating the additional indirect jobs created due to IFC's engagement.

Direct employment effects

OCL had 1,700 direct employees in fiscal year 2007, tracked through IFC's tracking system- DOTS² -. By fiscal year 2011 direct employment had increased to nearly 2,000, indicating that the client created 300 new jobs during this period.

Compared with these direct employment effects, data collected through interviews suggest that in the same four years, 7,200 indirect jobs were created as a result of capacity expansion. These were above the estimated 7,990 indirect jobs that OCL provided in fiscal year 2007.

Indirect employment effects

To identify the main components in the supply chain, cost drivers and labor-intensive processes were discussed. The three main raw materials in OCL's cement production are limestone, slag, and coal. Limestone is extracted from leased quarries, while slag and coal are supplied by monopolies where employment does not depend on level changes in OCL operations. So they were not studied.³

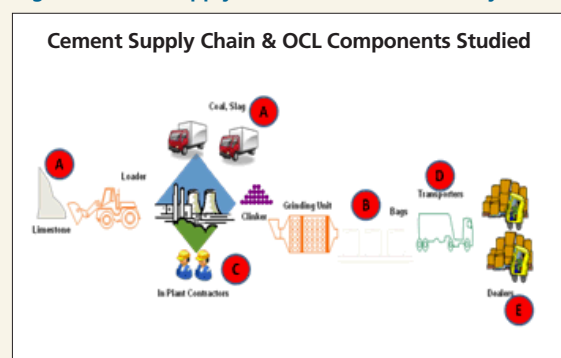
Yet significant indirect employment generation was identified in the transportation and logistics of these raw

materials. OCL operations generate additional indirect employment in three areas:

- Supplying bags for packing cement.
- In-plant contracting of services.
- Developing a distribution network, including transportation of bagged cement to dealers.

Figure 1 shows a simplified cement supply chain.

Figure 1: OCL's Supply Chain and Points of Analysis


Raw material transportation and handling (A)

For transporting and handling the raw material required for the 1.9 million MT additional capacity, about 350 jobs were created between fiscal years 2007 and 2011. Most were unskilled, and due to their physical aspects, almost all were for men.⁴

Limestone is mined from OCL's quarry (Lanjiberna limestone deposit). This activity generates 50 percent reject material that has to be crushed and removed. OCL contracts about a quarter of this work to contractors who employ manual labor. About 235 additional unskilled jobs and 30 skilled jobs were created through this activity.

Slag is a residual from steel plants in abundant supply. OCL's main suppliers include two large manufacturers in the region. This activity was estimated to create 23 jobs.

Coal is purchased partly locally but also from Meghalaya in the northeast. In Rajgangpur about half of coal supply transportation is mechanized through rail wagons and tippers; the other half requires manual work. In Bhubaneswar all coal is delivered by road. Based on interviews with



contractors, an estimated 65 jobs were created between fiscal years 2007 and 2011.

Suppliers of cement Bags (B)

Sacks for bagging cement account for 12 percent of the cement cost per unit. OCL has about 15 suppliers that supply sacks to plants in both cities. Five of these have OCL as a significant customer, accounting for 20-50 percent of their turnover. Together these five plants supply about half of OCL's requirements.

Due to the capacity expansion, OCL's purchase of cement sacks rose by about 30 million bags, creating about 300 unskilled manual labor jobs in the past four years.

Plant contractors (C)

Like other Indian manufacturers, OCL relies on contract labor.⁵ Between fiscal years 2007 and 2011 the number of contractors increased from 69 to 116 in both plants, with average employment increasing by a total of 1,150 people. About 70 percent of this increase was for unskilled labor and about 20 percent for women. This was the only point in the study where such a share of additional jobs was found for women.

Transportation of bagged cement (D)

OCL relies on dedicated and shared transporters that carry bagged cement to points in the distribution network, with dedicated transporters carrying 50 percent and shared transporters 30 percent of the final dispatch.

Dedicated transporters have truck fleets based at the plant, supported by small offices of support administrative and technical staff that generate indirect employment. Interviews with transporters in both plants suggest that about 725 additional indirect jobs were created by the increased dispatch of cement.

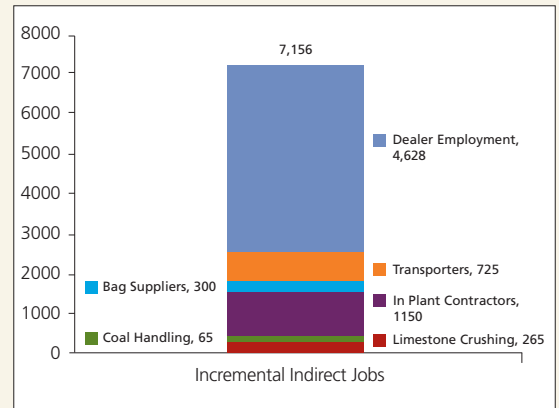
Two-thirds of these jobs were semiskilled or skilled. These were drivers needed for additional trucks, helpers, apprentices. But given the nature of the work, all these jobs were for men.

Creating jobs in distribution (E)

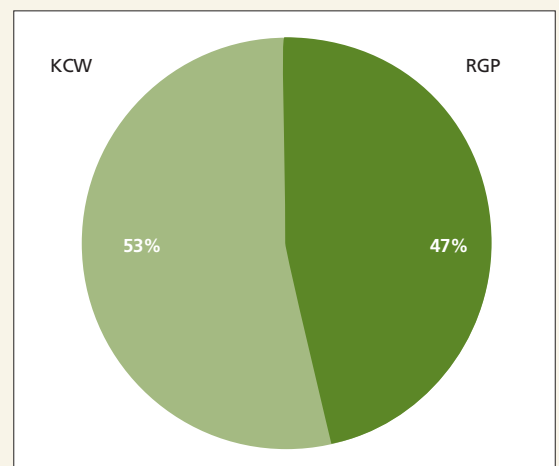
OCL has an extensive network of dealers to distribute its product, with nearly 30 percent of dealers exclusively carry OCL cement for sale. Operations are simple, with the main employment for unskilled and semiskilled workers consisting of truck drivers. Manual laborers are required for loading 50 kilogram sacks of cement. Dealers also require marketing and administrative staff.

Based on interviews with dealers of different sizes, the largest employment effects are observed in this network, with the capacity expansion having led to about 4,600 new jobs, about 70 percent of which were unskilled. The capacity expansion of 1.9 million MT translates to about 38 million 50 kilogram sacks that typically would be handled through manual, labor-intensive operations.

Figure 2: Breakdown of Additional Indirect Employment Indirect Job Creation due to Capacity Expansion



Share of RGP and KCW in Indirect Jobs Created



Note: job creation in slag handling not shown.

Given local demand and the supply characteristics of cement, the company's strong brand image and small home buyers for whom reliability is a key consideration, it can be reasonably concluded that these additional jobs can be related to the company's operations.

In summary, an incremental 7,200 indirect jobs were created due to this 1.9 million MT of capacity expansion in OCL. This was split nearly evenly between Rajganpur and Bhubaneswar. Figure 2 shows the indirect jobs being created by OCL.

Poverty impact of direct and indirect job creation

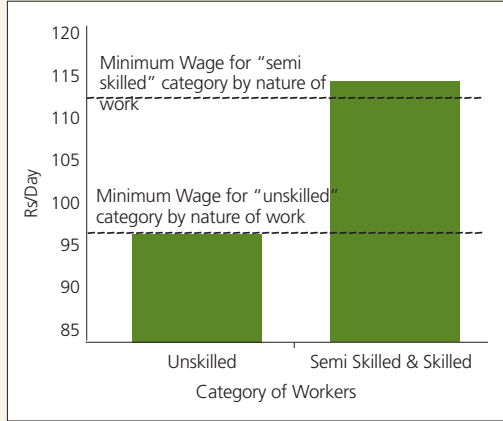
After Bihar, Orissa has the highest incidence of rural poverty (60 percent) of any Indian state.⁶ Orissa also has one of the highest unemployment rates, at about 9.4 percent.⁷ Hence new jobs are a pressing issue.

About two-thirds of the incremental job creation is for unskilled labor earning state minimum wages or above

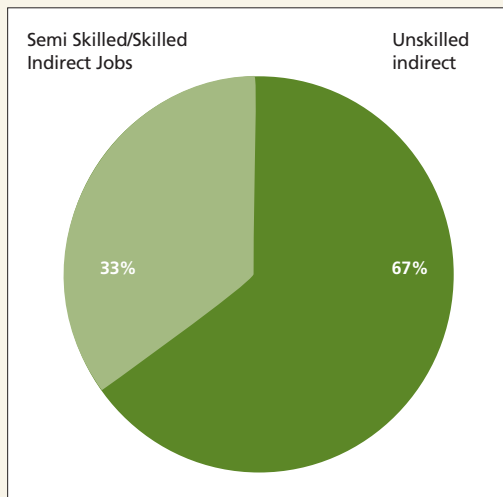


Figure 3: Wage Effects among Skill Categories

Daily wages for Skilled and Unskilled Workers in Cement in Orissa



Share of Skilled and Unskilled Indirect Jobs Created



minimum wages (Figure 3).⁸ The other third are semi-skilled and skilled labor—from truck drivers to administrative and managerial staff.

This creation of jobs around the minimum wage suggests client operations significantly reduce poverty.

Job multiplier for cement

Based on the direct and indirect jobs created for the capacity expansion of 1.9 million MT in OCL, an employment multiplier can be calculated in several ways. Data for fiscal year 2007 give a multiplier of five. In fiscal year 2011 it was eight.

Such a large difference in the multiplier might be misleading because a project will have a bigger multiplier if the number of additional direct jobs is small. Regional and industry context is also important and differ by projects and across economies even in the same industry. In India, where labor is abundant and

Job Effects	FY07	FY11	Change
Direct Jobs	1700	1993	293
Indirect Jobs	7990	15158	7156
Ratio	-5	~8	25

Box 1: Contractor Tales from Bhubaneswar⁹

From Strength to Strength

Ramu Rawat provides labor for electrical and civil work jobs at the plant. When starting as a contractor in fiscal year 2008, he employed five people. He now has a team of 70. Before coming to Bhubaneswar, he was unemployed and spent his time idling around in the surrounding village.

RK Jena is Bhubaneswar's contractor for a variety of activities including canteen maintenance, and civil works. In fiscal 2008 he began his business with people. He now employs 200 for the plant.

Mani came as a mason to work at the factory in 2008 and is now a contractor providing about 35 laborers to the plant for civil work operations and indirect jobs.

comparatively cheap, labor-intensive technologies and means of transport and loading—the main sources of indirect jobs—will give a larger multiplier relative to locations where production and transport is more mechanized.

Conclusion

OCL's direct employment effects do not reveal the secondary yet significant indirect employment creation being generated in its supply chain and distribution channels by its expansion activities.

Though the magnitude of these indirect effects might be due to the specific regional context where labor is abundant and much of the handling of cement is manual, these jobs are being created in one of India's poorest states—with high unemployment and might be the way out of poverty for many. This is especially the case here because a large portion of the indirect jobs created are unskilled and pay minimum wages.



A number of lessons come from this study:

- By supporting clients like OCL, even in traditional capital-intensive sectors, IFC is helping create jobs in its client countries through significant indirect job creation, which is usually not captured by IFC's results tracking system.
- It is useful to think beyond the supply chain to the distribution networks to identify these effects. Employment in the distribution networks is more localized than in the supply chain, which might be increasingly integrated with global supply chains.

To be able to measure similar effects for the portfolio, it may be useful to replicate similar analyses across an optimal number of other IFC client's in the same sector based on characteristics that differentiate the model. Building this deeper understanding could help provide multipliers that could be explored for future measurement.¹⁰

Endnotes

¹ Existing capacity was 1.8 million MT.

² Development Outcome Tracking System. More details available on www.ifc.org/results

³ The methodology note for the micro case studies is available at <http://www.ifc.org/jobcreation>.

⁴ Under Indian labor laws, "unskilled" is defined as work involving simple operation requiring little or no skill or experience on the job. "Semiskilled" is defined as work that involves skill acquired through experience on the job and capable of being performed under the supervision of a skilled employee and includes unskilled supervisory work. "Skilled" work means work that involves skill or competence acquired through experience on the job or through training as an apprentice or in a technical or vocational institute and calls for initiative and judgment.

⁵ Between 1985 and 2002 the prevalence of contract workers in Indian manufacturing rose from 12 to 23 percent (A. Ahsan and C. Pages, 2006, "Helping or Hurting Workers? Assessing the Effects of De Jure and De Facto Labour Regulation in India).

⁶ Himanshu (2010): 'Towards New Poverty Lines for India', *Economic and Political Weekly*, Vol XLV (1): 38-48. Estimates based on NSSO 2004-05.

⁷ Report on Employment & Unemployment Survey 2009-10, Labor Bureau, Ministry of Labor, Government of India.

⁸ In India, states are empowered to establish their own minimum wage rates for categories of skill and work.

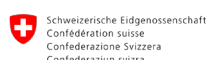
⁹ Below are examples of people who started as small contractors, in some cases, having been unemployed earlier. Over the last 4 years they have significantly increased their contracting services to OCL.

¹⁰ *This study has been led by Ruchira Kumar, Private Sector Development Specialist, Development Impact Department (CD)I, IFC, along with Dr. Vegard Iverson, Senior Research Fellow at the University of Manchester. Guidance has been provided by Roland Michelitsch, Chief Evaluation Officer, Development Impact Department, IFC.*

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