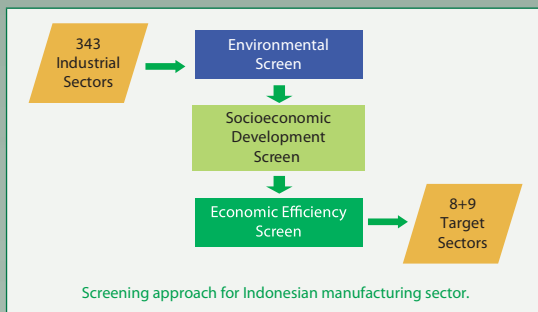


Phase II - Sector Analysis

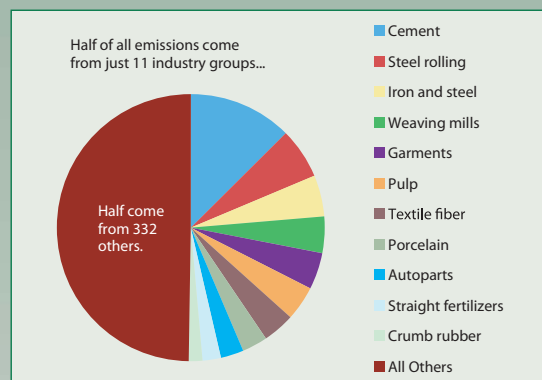
Energy Efficiency in the Manufacturing Sector

The Indonesian manufacturing sector is one of the nation's largest sources of fossil-fuel derived greenhouse gas (GHG) emissions, and continues to grow. Overall, manufacturing was responsible for over 40 percent of Indonesia's 2005 fossil-fuel emissions (including electricity use within manufacturing). Future emissions will be even larger because emissions from fossil-fuel use (non-forestry emissions) are growing at about 6 percent per year. With the growing focus on climate change issues and the potential for carbon market finance and other forms of assistance, there is now a good opportunity to address manufacturing sector emissions in a comprehensive manner.



The Government of Indonesia (GOI), in particular the Ministry of Finance and National Council on Climate Change, has commissioned a Low Carbon Development Options study to evaluate and develop strategic options to reduce emissions intensity without compromising development objectives. This study provides additional support and analysis toward development of a practical and coordinated approach to managing manufacturing sector emissions. It finds that a few key sub-sectors possess the combination of large reduction potential, strategic benefits for future economic development, and cost-effective opportunities. This study adds an economic and policy dimension that may usefully complement prior work and engage the Ministry of Finance more actively in the quest for cost-effective emissions reductions.

This study developed a three-tiered screening process to identify industry sub-sectors with high emissions reduction potential, socioeconomic development interests, and economic incentive for improvement. The results of the screening process identify targets for energy savings and emissions reductions that include sectors with high greenhouse gas emissions and that are key to the current or future Indonesian economy as measured by a variety of statistics including their value added, annual growth rate, or economic multipliers. If the GOI is seeking targets for emissions reductions, or potential carbon market opportunities, it makes sense to start with these sub-sectors that represent the combination of the most potential reductions and the most important economic targets. Public policy makers should be interested in making these sub-sectors more modern, efficient, and clean as a contribution to Indonesia's development and competitiveness, as well as to its environment. In fact, the Ministry of Industry has already identified several of these basic manufacturing sectors for further study and action.



Finally, the analysis shows that there is significant potential for cost-effective energy efficiency improvements among the same general set of sectors. This indicates that much can be done to reduce the carbon intensity of the manufacturing sector with overall cost savings. Analysis shows that

many of these sub-sectors also have an economic motive and incentive to reduce energy use, together with the emissions that come in parallel.

This study also reviewed global best practices and focused on approaches that are both cost effective and desirable for economic development, while also contributing to climate change mitigation. Based on this review, most of the actions appropriate in the manufacturing sector fall into three main categories (1) energy management and efficiency deployment, (2) specific technology investments, and (3) efficiency standards. Note that the sub-sectors identified for further action include both large capital-intensive industries with relatively few plants (e.g., steel) and diverse industry groups consisting of many smaller and medium-sized enterprises (e.g., textiles or automobile parts manufacturing). Different interventions may be appropriate for the two types of industries. More

specific and tailored interventions, such as energy audits, might be cost effective for a few large plants. Alternatively, efficiency standards might be appropriate (and easier to apply) across an industry consisting of thousands of small and medium sized firms (e.g., food and beverage manufacturing).

To complement the technical and regulatory options, this analysis also emphasized fiscal policy options that could enhance and support the investment and energy management options. This fiscal angle may appeal to the Ministry of Finance and serve as an entry point for integrated and coordinated actions across ministries. Fiscal policy options would likely best be used to augment or provide an additional incentive to adopt a more technical standard or practice. For example, depreciation rules can provide an incentive for installation of newer, energy efficient technologies.

Manufacturing Sector Organization	Manufacturing Sub Sectors Resulting from Screening Process (Based On Emissions, Economic Contribution, and Energy Efficiency)	
	High Priority	Medium Priority
Few Targets: Concentrated, large firms	<ul style="list-style-type: none"> • Cement • Structural Materials of Porcelain (Ceramic Tiles) • Straight Fertilizer 	<ul style="list-style-type: none"> • Steel Rolling • Iron & Steel Basic Industry • Pulp
Many Targets: Decentralized, smaller firms	<ul style="list-style-type: none"> • Weaving Mills • Textile Fiber • Finished Textiles • Crumb Rubber 	<ul style="list-style-type: none"> • Spinning Mills • Motor Vehicle Components, Apparatus • Cultural Papers • Tires And Inner Tubes • Crude Vegetable & Palm Oil • Basic Chemicals

Low Carbon Development Options for Indonesia is a collaboration between:



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