

2011 ENERGY EFFICIENCY INDICATOR STUDY: CHINA REGIONAL RESULTS



Regional Summary

INTRODUCTION

With expectations of rising energy costs, concerns over energy security, and continuing impetus from central government policy, facility executives in China continue to focus on energy consumption, according to the results of the fifth annual Energy Efficiency Indicator (EEI) survey. Conducted by the Institute for Building Efficiency with the International Facility Management Association and the Urban Land Institute, the EEI is a global survey of nearly 4,000 facility managers and executives. The 2011 EEI survey reached 450 respondents from six regions of China, up from 321 respondents in 2010.

WHO RESPONDED TO THE SURVEY?

The Energy Efficiency Indicator survey asks executives in the commercial and industrial and institutional sectors about their priorities, practices, investment plans and challenges in considering and pursuing energy-related investments and activities. To qualify, respondents must have budget responsibility for at least one nonresidential building, and their responsibilities must include energy use, either through monitoring of usage or proposing or approving energy-related projects.

Eighty-four percent of the respondents from China identified themselves as industrial or commercial businesses. The remaining 16% came from institutions such as government, education and healthcare. Seventy percent reported that the majority of their facilities were in high-density urban settings, and 20% more were in business districts or industrial parks. Sixty-four percent of respondents were responsible for a single building or campus, rather than a regional or national portfolio.

KEY FINDINGS

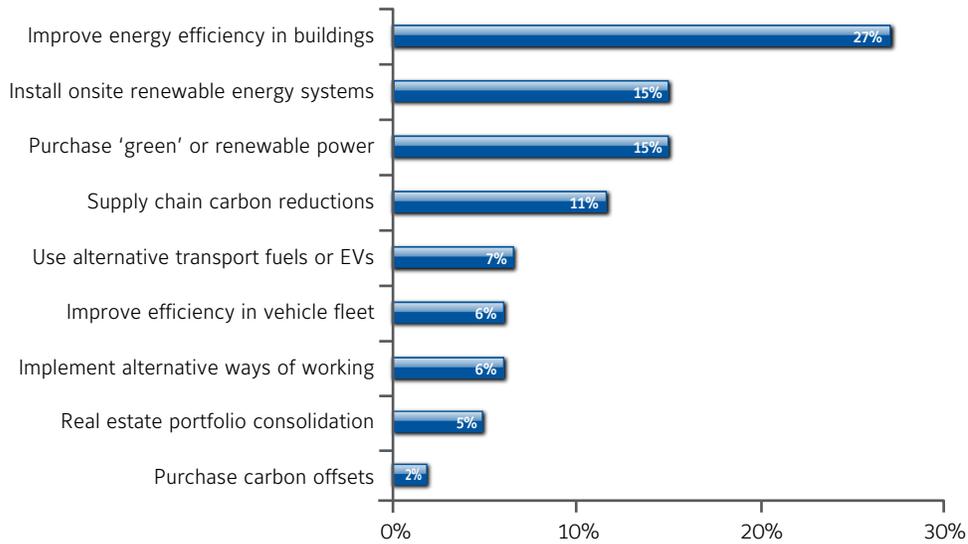
The 2011 EEI survey revealed:

- China continues to focus strongly on energy efficiency.
- Motivations for energy efficiency are shifting, and significant barriers to investments remain.
- The commercial and industrial sectors lead the institutional sector in efficiency investment and action.

1. China continues to focus strongly on energy efficiency.

The importance that executives in China place on energy efficiency continues to increase. An even larger majority of respondents (84% versus 79% in 2010) said that energy management was extremely or very important to their organizations. This is not surprising in that an overwhelming majority (93% versus 88% last year) expected energy prices to increase over the next 12 months. Furthermore, building energy efficiency remained the most mentioned (27%) as the top strategy for reducing organizations' carbon footprint (Figure 1).

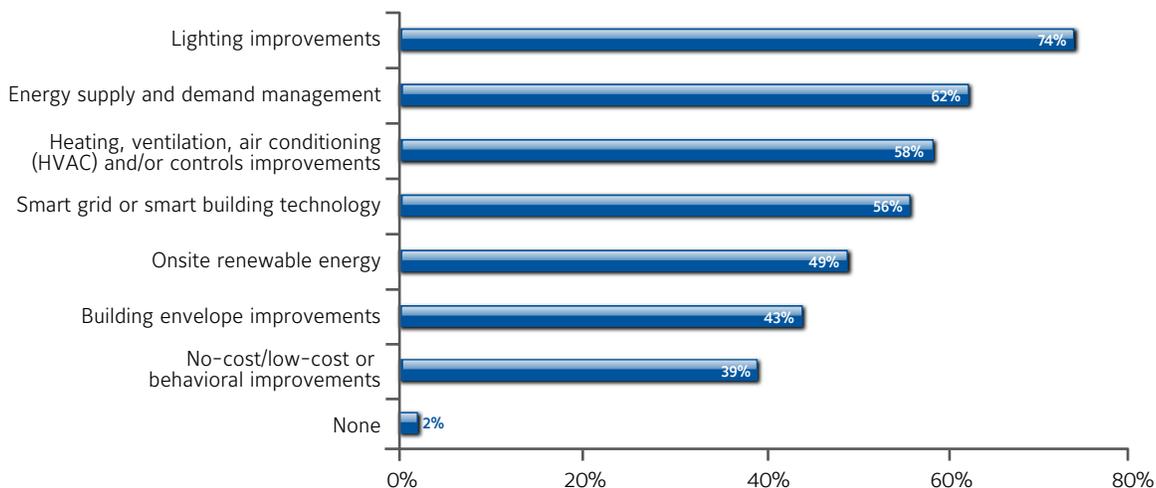
Figure 1. Top strategies for reducing carbon footprint



The 2011 survey also seemed to indicate strong growth in emphasis on green buildings, although there is some uncertainty about the definition of green buildings and how the respondents interpreted the question. (For example, some respondents may have equated “green building certification” with compliance to China’s energy efficiency building codes.) Those caveats aside, interest in green buildings was clear. Forty-seven percent of respondents said they planned to green new buildings, and 53% said they planned to green existing buildings. In addition, 16% more respondents than last year said they had certified at least one green building.

The survey found Chinese building decision-makers pursuing a wide variety of energy efficiency projects, including shallow (low-investment, fast payback) measures like lighting retrofits, energy supply and demand management, and behavioral improvements, as well as deep (larger investment, longer payback) measures like HVAC and control improvements, smart grid or smart building technologies, onsite renewable energy, and building envelope improvements.

Figure 2. Energy efficiency measures being pursued



When asked which measures in their region of the country would have the largest impact for reducing energy consumption, respondents ranked efficient lighting (average 60% mentions) and high-efficiency HVAC equipment (average 45% mentions) first and second across the board. Beyond that, measures cited seem to reflect differences in climate and industry makeup. Building envelope improvements ranked third in the south (mentioned by 36%) and a stronger third in the north (43%). In the south, the third most cited item (39%) was audits or benchmarking of facilities, a means for identifying improvements that would increase efficiency.

In ranking on-site technologies expected to see the greatest market adoption in the next 10 years, Chinese decision-makers cited solar photovoltaic systems (36%), smart building technology (35%) and lighting technologies (33%) as the top three.

2. Motivations for energy efficiency are shifting

While energy cost savings remained the top driver for energy efficiency in China, as in 2010, other motivations changed in importance (Figure 3). Existing policy ranked third in 2011, up from eighth last year, possibly reflecting the March 2011 release of China's 12th Five Year Plan (2011-15), which gives increasing priority to energy efficiency and climate change and for the first time includes formalized reduction targets for both energy and greenhouse gas emissions intensity. Energy security (not included as a choice in the 2010 survey) ranked second in 2011, replacing greenhouse gas reduction, which fell to fourth.

Figure 3. Changing motives for energy efficiency

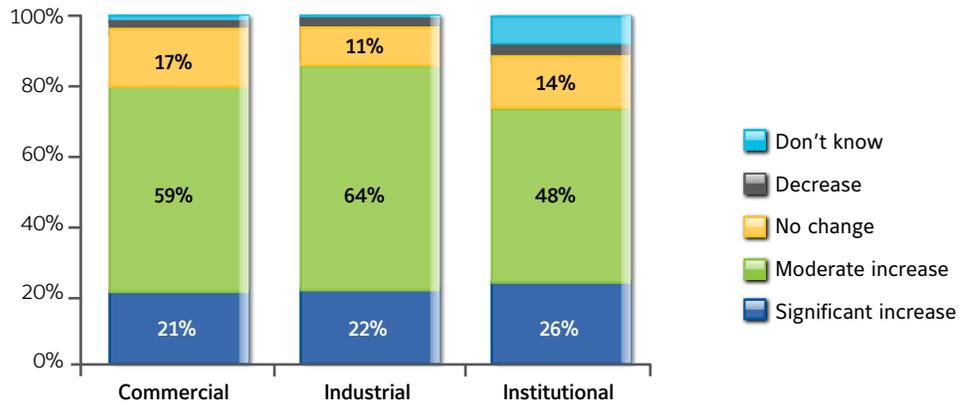
2011 Global	Drivers of efficiency	2010 	2011 
1	Energy cost savings	1	1
2	Government/utility incentives/rebates	6	5
3	Enhanced brand or public image	3	6
4	Increasing energy security	N/A	2
4	Greenhouse gas reduction	2	4
6	Existing policy	8	3

China releases its 12th Five Year Plan in March 2011

The 2011 survey results ranked China highest in the world in terms of expectations for significant new national energy policy.

Large majorities expected the 12th Five Year Plan to drive more energy efficiency investments (Figure 4). This was strongest in the industrial sector, where 86% of respondents expected the plan to lead to moderate or significant increases in investment.

Figure 4. Effect of 12th Five Year Plan on energy efficiency investments

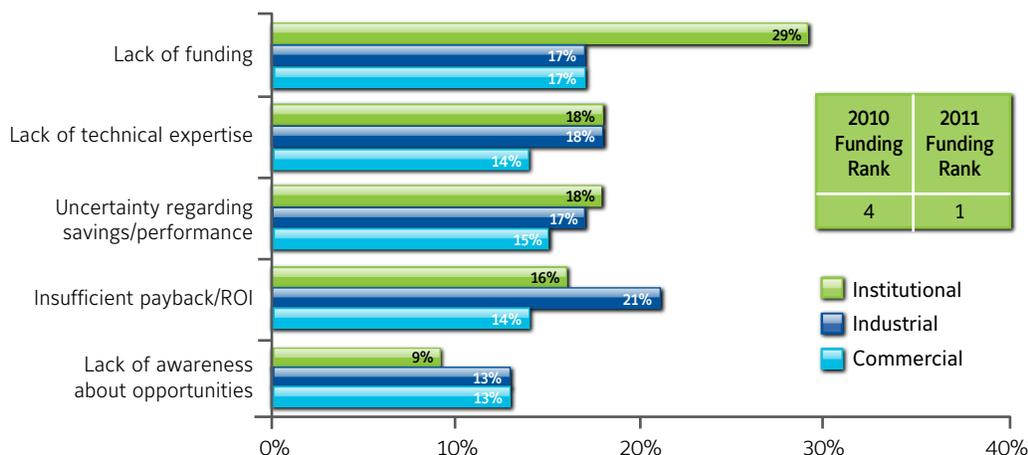


As in the rest of the world, China's respondents ranked the top five obstacles in the path to more energy efficiency as:

- Lack of awareness of opportunities for energy savings.
- Lack of technical expertise to design and complete projects.
- Lack of certainty that promised savings will be achieved.
- Inability of projects to meet the organization's financial criteria.
- Lack of available capital for investment in projects.

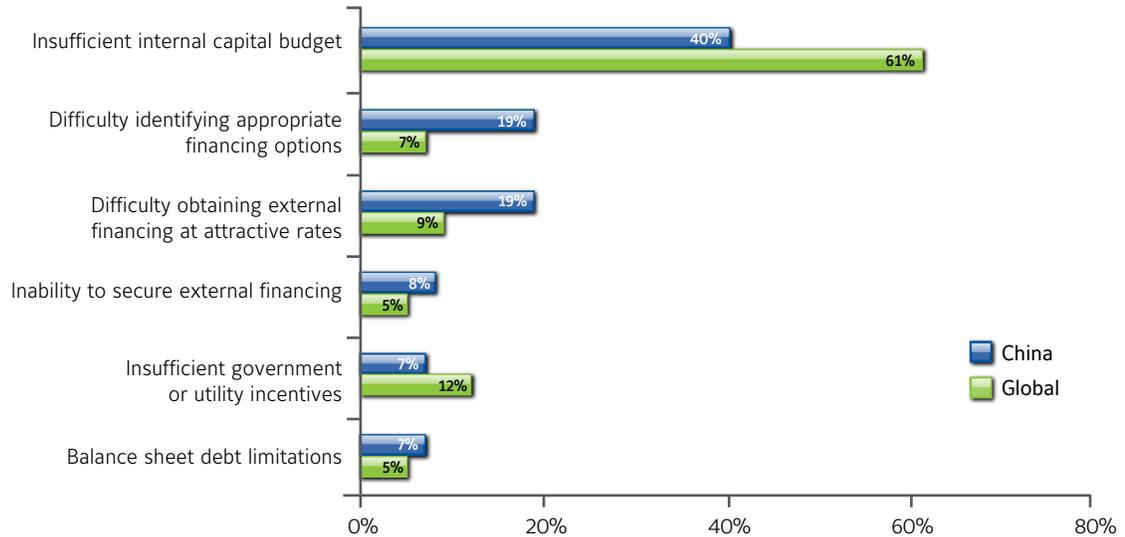
The 2011 survey showed financial barriers becoming more significant in China: Lack of available capital ranked as the leading challenge, versus fourth in 2010. The funding barrier was strongest in the institutional sector, where 29% of respondents rated it as their top barrier (Figure 5).

Figure 5. Top barriers to energy efficiency by sector



Among those who chose funding as the top barrier, insufficient internal capital budget remained by far the top financial hurdle, chosen by 40% of respondents (and by 61% of respondents globally). Chinese executives appeared to be looking more aggressively for other funding options than those in the rest of the world, but also indicated having difficulty securing such options at attractive rates (Figure 6).

Figure 6. Top financial barriers to energy efficiency investments



3. Commercial and industrial sectors lead in investment and action

The 2011 survey results clearly showed the commercial and industrial sectors taking more action on energy efficiency than the institutional sector. Among specific energy measures adopted in the past year, commercial and industrial organizations were significantly more likely than institutional entities to have adopted HVAC and control improvements (61% to 48%), energy supply and demand management measures (63% to 44%), smart grid or smart building technology (56% to 42%), and on-site renewable energy (50% to 32%).

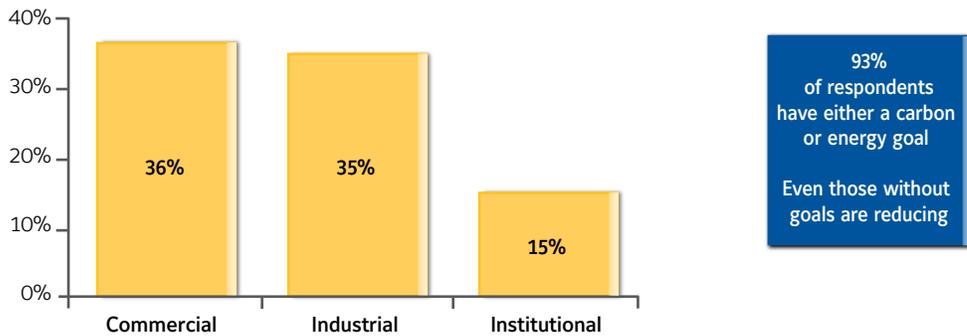
Furthermore, commercial and industrial organizations that adopted two or more of the key best practices that help drive efficiency projects (setting energy and carbon reduction goals, analyzing data frequently, and adding internal and external resources to manage energy projects) – implemented more efficiency measures than institutional respondents. For example, commercial and industrial respondents deploying all three best practices adopted an average of 17.5 and 18.2 measures, versus 14.8 implemented by institutional organizations also employing all three practices (Figure 7).

Figure 7. Adoption of best practices by sector



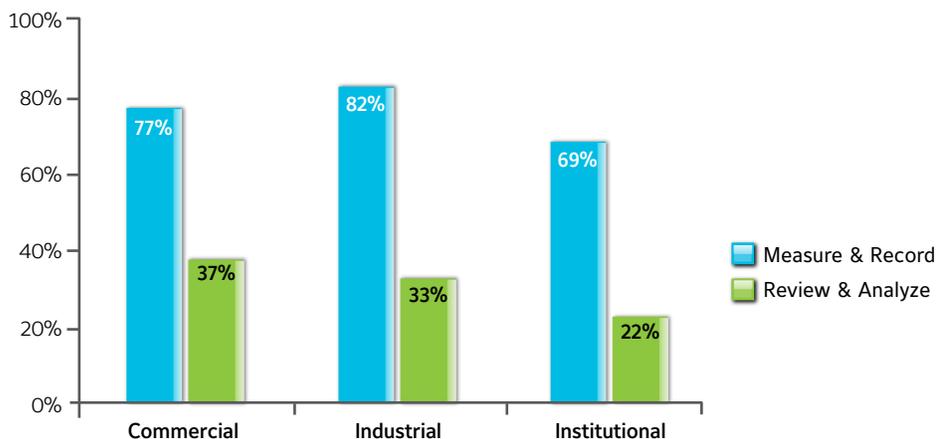
The setting of public reduction goals for carbon was far more prevalent in the commercial (36%) and industrial (35%) sectors than in the institutional sector (15%). All told, however, goal setting was widespread: 93% of respondents had either a carbon or energy goal, either public or internal only (Figure 8).

Figure 8. Setting energy and carbon reduction goals



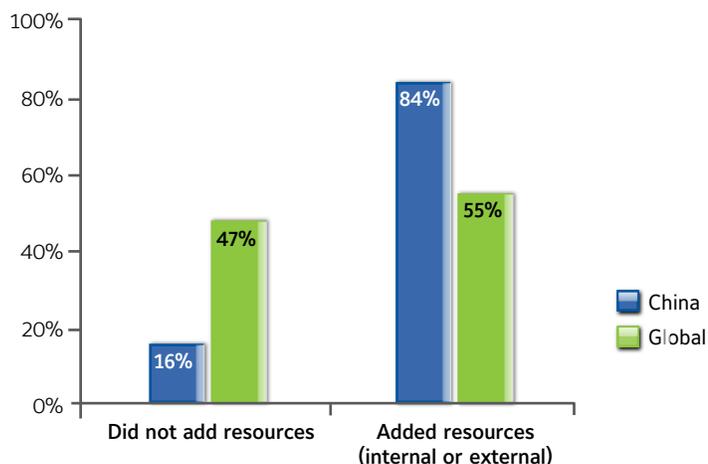
Greater investments in efficiency are tied to organizations that not only measure and record energy data but also take the value-added step of reviewing and analyzing this data frequently. The 2011 EEI survey for China found that 37% of commercial entities and 33% of industrial entities are reviewing and analyzing data weekly, versus 22% in the institutional sector. All three sectors showed a strong majority measuring energy data.

Figure 9. Analyzing energy data frequently



Chinese organizations were more likely than those in the rest of the world to add internal or external resources to improve their capability and capacity to implement energy efficiency projects (Figure 10). These actions include: hiring more dedicated staff, repurposing staff from other areas and working with more contractors and vendors.

Figure 10. Adding resources to support energy efficiency



CONCLUSIONS AND IMPLICATIONS

While energy efficiency in China is strong and steadily growing in importance, considerable challenges remain. The EEI 2011 survey shows interest in energy efficiency clearly rising along with increasing energy prices, concern for energy security, and the emergence of new government policies. At the same time, the survey again illuminates the financial and organizational barriers that prevent Chinese decision-makers from doing more to improve their facilities' efficiency. In particular, the survey found:

- 1. CHINA continues to focus on energy efficiency.** Energy management is growing in importance in decision-makers' eyes, and building efficiency remains the top strategy for reducing an organizations' carbon footprint.
- 2. Motivations for energy efficiency and barriers to its adoption are shifting.** Government policy rose significantly in importance as a driver of efficiency in 2011, and respondents expected the 12th Five Year Plan to influence an increase in efficiency investment. Meanwhile, funding for energy efficiency projects has become a much larger challenge.
- 3. The commercial and industrial sectors lead in implementation of efficiency measures.** Best practices of setting reduction goals, analyzing energy data frequently and adding resources for energy projects are tied with more efficiency improvements. Commercial and industrial organizations lead in implementation of more efficiency measures.

The Institute for Building Efficiency is an initiative of Johnson Controls providing information and analysis of technologies, policies, and practices for efficient, high performance buildings and smart energy systems around the world. The Institute leverages the company's 125 years of global experience providing energy efficient solutions for buildings to support and complement the efforts of nonprofit organizations and industry associations. The Institute focuses on practical solutions that are innovative, cost-effective and scalable.

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