



Energy for all, yes.  
 And renewable energy, if at all possible, given its new financial allure. But what about the energy errors, innocent to be sure, of yesterday, or the oversights of today? How about pollution, wasteful consumption and the blind inefficiency of existing energy systems? The damage to health, economy and environment? If you think you cannot afford to be energy efficient, find someone who will help you to be and you will both make money. A lesson from China.

# “Save energy, and make money”



**T**he story of energy efficiency is, in China today as in any country, perhaps unromantic yet it is a fascinating journey. It can lead you to rooftops, water tanks, cellars and

machine rooms in a broad sweep of factories and institutional buildings – hotels, airports, schools, department stores, offices. To steel mills, fertilizer plants, lorry companies, railways systems, water treatment works.

It is a journey that appeals equally to many professions. To the engineer with her or his immensely practical mind; to the environmentalist whose passion is to reduce pollution and damage to the atmosphere; to the planner looking for a way to start today what may take years to legislate for; and to the decision-maker wanting to keep diverse interest



groups satisfied and occupied, to make visible progress in the short-term and have some long-term kudos.

**You said we could make money?**

With rising fuel prices on the world market, and demand surges on the domestic front, energy efficiency is a hot topic. In China, it has in fact been a cornerstone of the government's energy policy over the last two decades.

However, in a world where incentives and subsidies are often no longer encouraged nor affordable, the trick is to get investments in energy

efficiency accepted and put into practice. And that in a language that most people, right or wrong, understand. In the phrase coined by one Chinese energy efficiency expert: 'Save energy and make money'.

Fair enough. But. The business models of most institutions are based on paradigms which are free of the need to save energy, or which make no link between energy use and employee health and safety, or the community environment. General environmental awareness has only started to rise in recent years. And, even when a company



realizes it could benefit itself and society through energy efficiency, its business model does not easily allow the necessary investments. And any credit that can be mobilized is usually to be found on informal networks, since banks do not yet have a track record in this field.

Necessity, yet again, is the mother of invention, or inventiveness. In the Chinese context, it is to adapt the notion of energy companies practised, for example, in Europe and North America. It is to create and encourage companies – Energy Management Companies (EMC) – which can make profits through investing in energy

*Spot the savings and share the gain*



**"paybacks tied to energy savings"**

efficiency projects in other companies with paybacks tied to energy savings – in essence, energy service companies (ESCOs). If it works, the mechanism has its own momentum for the idea to spread widely. And wide is, in the case of China, very wide indeed. There are 100,000 large office blocks, stores and hotels with inefficient air-conditioning and heating systems, with

10,000 more expected by 2009. Not to mention countless steel mills, or fertilizer plants, or cement factories with guzzling, belching production.

**Building capacity, capacity building**

The China Energy Conservation Project, launched by the World Bank in 1998, made considerable progress in assisting in the transition of China's energy conservation activities from a system based on planned economy concepts to a more market-oriented system, which can be sustained over time and grow with China's economy. Three EMCs, founded in



Beijing, Liaoning and Shandong, successfully developed growing businesses.

Making the step from a cluster of companies to the broad development of an entire EMC industry is what a new project, Energy Conservation II, started in 2002, has in mind. Nothing less than that. Admittedly, doing this quickly will require China's domestic banks to step in as the industry's primary source of credit. And it will need the massive dissemination of the concept and the experiences achieved along with technical assistance and practical training for emerging

**The man who changes 30,000 light bulbs**

He beams like a sphinx in a bright blue boiler suit, Mr Wang. The chief engineer of Shanghai's Yashin (New Asia) department store is totally unfazed by the sudden invasion of his control room cellar by the people from the Shanghai Shangliao energy management company (EMC), who share, yuan by yuan, the cost savings the store achieves. "They're always dropping in by surprise like this. It makes for a more open relationship", he confides.

"Our goal is dead simple: to save energy and to reduce costs. So we're replacing 30,000 incandescent bulbs with low-energy fluorescent ones over our five floors. We've followed the EMC advice on changing the frequency of the air cooling machines, reducing consumption by 15%. Now we're studying water cooling and storage in off-peak night-time periods, at one-third of peak rates." What about the time he and his team of 15 save on maintenance and replacements? "We think up new savings and we meet here, and often outside working

hours too, to discuss the why's and the wherefores of how these savings are important."

Up on the store's roof, emblematic of what is happening downstairs and across the city, a wee little plant has lodged itself in a crack between two cooling pipes. A defiant,



optimistic sprig of green. Clambering around the pipes, the EMC people don't seem to notice it. We do, and Mr Wang winks at us and shares a silent grin.

**"domestic banks as primary source of credit"**

EMCs – expected to number 60 by 2005. In fact, by the end of 2004, the number of operational EMCs was nudging the 30 mark.

Many start-up EMCs across China are focussing on clients in prestigious sectors, such as hotels, department stores and institutions, and on lighting, heating and cooking – even Guilin's international airport has cut its electricity consumption by one-fifth. This approach encourages new customers to sign up, and it spreads energy awareness. Others

are focused on well-established industries.

That the market appears to be wide open is underscored by the geographical spread of some EMCs' operations. Some, such as the HHBT air-conditioning economizers in Guiyang, have 10 or more branch offices across the country, operating in cities which are host to other EMCs. It is a sellers' market, and the time when demand forces EMCs to better organize their offer is, clearly, some way away. The new trade association of EMCs – the EMC Committee of the China Energy Conservation Association (EMCA) – provides a forum for standards, codes and negotiations on this to take shape.

### Bridge building

Whatever these doubts, time, and international energy prices, are definitely on the side of energy efficiency. Shen Longhai, the director of EMCA, is in no two minds about this. "We have 24 provinces which are experiencing electricity shortages to one extent or another. In 1993 we became a net oil importer and in 2004 we may even exceed 100 millions tonnes of imported oil. So we need to get more energy, and get people to use it more efficiently." In such a market-based concept, he is asked, what is the role of government?



### "We never knew we were an EMC"

How, for years not knowing that they were an Energy Management Company. Cai Xiao Bing is the General Manager of the Huiton Huacheng Building Science and Technologies Company in the central southern city of Guiyang. Unaware he is not, such is his attention to detail. He can tell you the net annual profit on each of HHBT's 66 projects as of October 2004 (15,333 Yuan; US\$ 1,783); their accuracy in predicting energy savings at the start of a project (92%), and the annual savings, at 2004 rates, achieved by their customers in electricity (46 million kWh), in coal (18,340 t) and in carbon emissions (11,346 t). But being an EMC was new to him.

"You know, it wasn't until September of last year (2003) that we knew of the World Bank project, and they came and found us. That was the first time we knew there were so-called EMCs operating here in China.

We had come up with our own system, calling it 'finance-based operations'. We had noticed how a potential client, a hospital in Guilin, was not able to implement our technology [a software control for air-conditioning systems] from their own resources. So we agreed to share the savings and earn from that. Our backer was able to fund this to some extent.

The biggest obstacles to our expansion are the recruitment of qualified engineers, and the availability of loans. What's really needed is a large-scale reform of the banking system!

"Very important. It can introduce rules and policies to promote energy efficiency. But we here at EMCA have an important role too. We are the bridge between the market and the government. We can express the needs of EMCs to government, and they can in turn formulate the appropriate policies and provide necessary support to the EMCs."

Among the longer-term investments and regulations to be put in place are energy efficient production codes for many industrial sectors, including transport and storage, and building codes. In many cities, buildings are still being constructed at the end of 2004 which already

### "will less tempting sectors be approached?"

have contracts with local EMCs to come and install energy efficient systems as soon as they open in 2005 – the main Nanjing shopping street in downtown Shanghai has several such skyscrapers nearing completion where a more stringent building code would have made more sense in the planning and design phase. And work is underway, again with World Bank involvement, on such steps.

What is less clear is how, with a model which thrives on open market principles and practice, less tempting and less immediately lucrative sectors will be approached. It is one thing to reduce air-conditioning energy use by 45% in

your regional newspaper's showcase building, or your home city's leading hotel, and make a publicity splash with it. It is quite another to move into the higher-risk zone of energy-spilling metal workshops in crowded alleyways and to derive the financial gains that will allow the operators to adopt healthier practices.

Maybe there are indeed limits to growth in dealing profitably with the issues of, well, limits to growth, or at least limits to certain kinds of growth. Without doubt, the creativity of entrepreneurs is going to be sorely tested in keeping the EMC industry on a sound growth path. But this is a job well worth, superbly worth, doing, since it faces a fundamental issue of our time. The backing of the British development partner DFID, and ASTAE, is intended to help, on the job.

These are not the noble and necessary tasks of filling rustic gaps in the grid, or of expanding access to energy. This is not, not directly, about developing alternative sources of energy. This is reform at work. This is about turning around decades of mis-directed practices, kilowatt by kilowatt, carbon tonne by carbon tonne, without anyone getting hurt. And with a lot of people making money, creating livelihoods, in the process. ■



The first US\$ 11 million has been disbursed and 27 projects expected in the pipeline in 2004