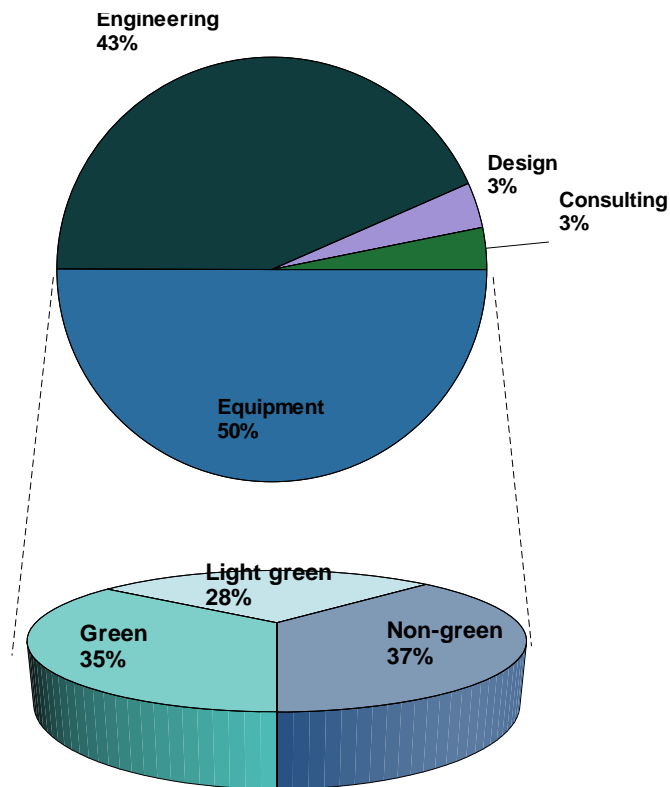


**Green HVAC products continue to sell in China during downturn. *Success is due to provable money savings, not a desire to appear “green”.***

GCiS China Strategic Research has published a study of the China market for energy efficient and environmentally friendly HVAC (Heating Ventilation and Air-Conditioning) equipment. A basket of green HVAC products, which represent a cross-section of applications, budgets and thermal zones in the domestic market, was surveyed between Q3 2008 and Q1 2009. The study finds that in spite of a slowing economy, China’s construction industry is driving a multibillion dollar HVAC market, including green equipment. Sales of equipment such as heat pumps and variable frequency drives (VFD), which have low costs relative to their payback period, are particularly popular.

Green HVAC accounts for around 20% of the total HVAC market and 35% of the HVAC equipment market. Together with light green products (which have an indirect impact on energy consumption or are not specifically designed to be green), this rises to 63% of the total equipment market.

**Figure 1: HVAC Market Size and Share by Aspect – Chart**



Source: GCiS Note: Percentages are based on supplier revenue

New construction accounts for around 90% of a green HVAC supplier's revenues. As such, the market is moving from the tier-one locations such as Beijing and Shanghai and towards tier-two locations in Central and Northern provinces. However, overall demand is uneven and a lack of regulation, enforcement and public awareness is inhibiting its potential to reduce HVAC energy consumption, estimated to be as high as 60% of a building's total.

Heightened public awareness of the relationship between indoor air quality (IAQ) and life expectancy is a nascent source of demand in some high-end applications but remains a latent force in the market as a whole. Paradoxically, in this market there is a disconnect between those that specify HVAC equipment and those that pay the electricity bills. This is especially acute in the fragmented residential and commercial property sectors.

### **Participants**

Suppliers of green HVAC fall into two categories: specialist producers and manufacturing groups. Suppliers typically have some proprietary technology which they integrate into an HVAC product or sell the technology on. Much green HVAC technology is imported and the foreign suppliers have a greater amount of engineering experience. However, domestic suppliers hold many key customer relationships and have proven masters of domestic commercialization. As such there are a number of JVs in China between foreign and domestic leaders.

Influential participants in this market are green HVAC OEMs, central air conditioner (CAC) suppliers, HVAC engineering contractors, design companies and real-estate developers. These companies are turning away from big equipment such as absorption chillers, which carry a price-tag twice that of their substitutes but use a third less energy, and towards smaller-scale solutions.

The EMCO (energy management company) and ESCO (energy saving company) business model has yet to take off in China. Installing equipment and deriving income from the money a client saves on their energy bill is hard to measure and prove outside of industrial applications.

### **Regulation and Incentives**

China's legal system is enforced at the discretion of local authorities, as opposed to a national/federal standard. There is also a time-lag for laws that is promulgated in Beijing to "trickle down" to the provincial or county level. Thus, legislature for green HVAC, while well-meaning, is of mixed influence. Subsidized fuel, which equates to subsidized electricity, is a considerable disincentive for buying energy efficient products and will inhibit the growth of green HVAC demand. Regulations pertaining to a building's thermal envelope (upon which

many aspects of HVAC regulation are based) exist on paper and are being incrementally, albeit unevenly, enforced.

With respect to specific equipment standards, China's Energy Star rating system where energy efficiency is graded from one to five, with one being the most energy efficient. This is based on the (GB12021.2-2003) standard, which applies primarily to standalone units but is also accorded to CAC equipment. As of March, 2009, there is a nationwide ban on all products with a rating of 5. The government aims to ban 4 and 3 ratings after 2009.

### **Trends in the Market**

The key trends in the market are brought about by global recession. These are falling equipment prices and a flight to short-term repayment. Traditionally a outward looking production platform, China's export market will shrink in 2009 and 2010 resulting in oversupply in the domestic market. Average prices of green HVAC products will fall by up to 5% in 2009, some products such as heat pumps, which are witnessing supply-side investment may be 10% cheaper by 2010.

But the domestic market is tightening too. Developers' horizons are shortened from years to months, and immediate, low risk economic gain are the dominant purchasing criteria. Products with a high upfront cost, such as absorption chillers are losing traction to products with relatively low upfront costs and a quick payback period. There is evidence that suppliers of VFD and heat pumps are actually investing into the downturn.

In sum, the market for green HVAC in China accounts for a third of all HVAC equipment revenues, a proportion which is expected to grow despite the economic malaise. The market is receptive to green solutions, but only where there are visible, provable and timely savings to be made. But this is a young market, construction (and, by extension, HVAC systems) is barely a decade old, meaning that intergenerational comparisons of energy efficient equipment have not started. Until customers are able to experience the savings promised by green HVAC, adoption will remain incremental.