There are many benefits to lime over other building materials. There is lower energy consumption in the manufacture of lime than the manufacture of cement, giving you a material with 50-70% less embodied energy. The historic precedents for lime are everywhere. Whether you are in Rome, Paris, London, Washington, or Richmond, you can find lime as the binder in historic masonry preceding 1900.

When you include natural hydraulic limes (water setting limes produced by burning limestone with naturally occurring silicates and aluminates) you have a range of compressive strengths to suit many different applications. Due to their softer (not to be confused with "weaker") properties, building materials such as brick, block, and stone, can be easily recycled without worry of damaging the masonry units. In addition to the lower embodied energy that lime brings to the table, they develop their strength by absorbing carbon dioxide from the atmosphere, reducing its total environmental impact. Plus, lime mortars are neutral. They just sit there and do their job. Building with lime may be a simple, extremely low tech way of approaching building construction, but it works!

Let's get back to the discussion regarding environmental impact.

I think we can all agree that the industrial contribution of greenhouse gasses to our atmosphere is a bad thing. We can easily shake our fingers at the automobile industry, electric companies, and the lot, but when you look at the numbers cement is the third largest cause of man-made carbon dioxide emissions.

Now keep in mind that cement is used in a lot of applications, be it building construction, road construction, or industrial structures such as nuclear reactors and oil rigs. Of course, it would be pretty tough to construct an oil rig or nuclear reactors out of lime concrete or clay, but is it possible that we could start using environmentally friendly options when buildings houses, retail spaces, or institutional buildings such as schools and courthouses that need to lead sustainable lives.

In 2005 the production of cement in the United States contributed over 45 million tons of carbon dioxide to the atmosphere. If we had only the CO2 sequestration of trees to accommodate this, it would take a forest approximately 28.5 million acres large to absorb the carbon dioxide. That's like bulldozing the state of Ohio and protecting it as a National Forest.

Now, having said all the cement industry is currently pursuing methods of cleaning up their act, but like Julian Allwood, an engineer and professor at the University of Cambridge explains the concept of sustainable cement as something of a contradiction in terms- like vegetarian meatballs. I feel the cement industry should be commended for their new approaches and

technologies, but as I mentioned before, each material has its application. Let's use cement where we need to, and explore alternative building materials in other applications where it makes sense.

The use of cement for the construction of an "average" size brick home built on a poured concrete slab is responsible for the output of up to 4500 lbs of carbon dioxide. Unlike lime, cement is not going to reabsorb the same levels of CO2. Now, it would take approximately an acre of forest to absorb that much carbon dioxide. Let's look at this same "average" home built with alternative materials.

A rough rule of thumb is for every 100lbs of lime that is used you will absorb approximately the same amount of CO2 that a tree does in a year. Let's build that same house as just a CMU shell. About 2300 square feet of interior space, you can absorb about 1350 lbs of CO2 from the atmosphere. That's the same as planting 28 trees.

Let's say we build the same house but instead of doing block we do 4 inch brick masonry. You can absorb about 2200 lbs of CO2 which equates to about 45 trees.

How about stucco? Lime is the perfect material for stuccoing/rendering/plastering wall surfaces due to its great resistance to cracking and its self healing properties if small or microcracking takes place. If we had that same 2300 square feet structure and stuccoed instead we would absorb about 3500 lbs of CO2 from the atmosphere. That's about 72 trees planted.

Lets build that CMU shell and then stucco it. Well hey, it may look good on the outside, but on the inside we have exposed CMU. Now, we know that won't work, so we will use lime and plaster the inside of the shell as well. We have just absorbed 8600 lbs of carbon dioxide. Would you be able to fit 179 trees in that same footprint?

Let's think… if only 2% of the conventional constructed stucco houses in the US built in 2005 switched to this type of building system, it would be like planting over 7000 acres of forest.

You might think by building a house with lime won't make a difference. But, by adjusting our construction practices a little, we can make tremendous in-roads to the amount of CO2 in our atmosphere.