A Larger Context for Risk and Responsibility

The Global Summit on the Role of Performance-based Building Regulations in Addressing Societal Expectations, International Policy, and Local Needs

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A presentation by

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Good afternoon. First I want to say that I am honored to have been invited to be a presenter at this summit.

We face truly awesome challenges, yet…

Caminante no hay camino se hace camino al andar.

The road is not made - we make it as we walk along.
-Antonio Machado

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Before I start my formal presentation I'd like to take a moment and ask you to look around the room and think about who isn't represented here. There are groups of people who almost never have a voice in meetings like this. The largest group of them are the majority of the population of the planet today, who currently survive on less than $2 a day. The other large unrepresented group are the roughly 3 billion more people who will join us in this century before the world population levels off at around 9.1 billion, according to the latest United Nations projection from just a few days ago. That means that roughly 6 billion of the 9 billion people who will be here in the next 50 or 60 years have no voice when policy makers get together to discuss most things of importance, including building codes.

Though we often seem unaware of the magnitude and seriousness of the challenges we are facing, our future is in our hands - the road is not made - we make it as we walk along - and that's what we're doing here today.

We face truly awesome challenges, yet...

The choices we make and the actions we take in the coming few years will largely determine the quality of life for all who follow...

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The decisions we make this decade, our willingness to take responsibility for the welfare of the children and all future generations, will determine what kind of existence the billions of people who follow us will have.

What I'll Talk About

Both the local and global perspectives are critical - we need to see and respond to real risks that building regulations have historically ignored.

Understanding the need for change is the first step. Then we'll need clarity about shared goals and effective transition strategies to get there.

Performance-based codes can be an essential tool for this necessary transformation in design, construction, development, and re-development.

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When we talk about these issues, we need to be in touch with all the risks that we create with our buildings and with our regulations, not just at the building site or even the locality, but in a global context. Only then will we be able to make good choices and balance that full range of risks. Only after we've looked clearly at our present circumstances, then agreed upon what it is we want to achieve, and started to develop effective transition strategies to get from where we are to where we want to be, only then will we be able to make truly responsible decisions. Performance-based regulations can play a very important role in the transformation of the building sector to sustainable practice.
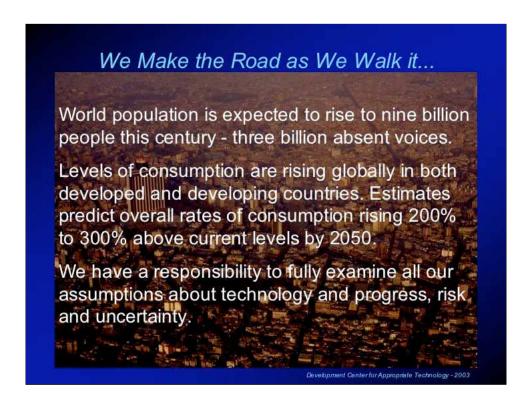
We Make the Road as We Walk it...

If we are to responsibly create policies that can enable performance-based building regulations to meet societal expectations and local needs, we need to first understand the context in which those needs and expectations exist.

Which societal expectations and local needs are we going to meet? Are we only serving, those with loud, clear voices who are present in these discussions, or do we also need to serve those who can't represent themselves in this process?

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We have to do this work within a much larger context than we have historically used. When we talk about societal expectations and local needs we need be clear about whose expectations and needs we are addressing. To achieve a balance between different kinds of risk requires us to consider points of view and large parts of the population we haven't traditionally included. That means we'll need to consciously and continuously remember to include the interests of those not present and those not yet born.

We Make the Road as We Walk it...

World population is expected to rise to nine billion people this century - three billion absent voices.

Levels of consumption are rising globally in both developed and developing countries. Estimates predict overall rates of consumption rising 200% to 300% above current levels by 2050.

We have a responsibility to fully examine all our assumptions about technology and progress, risk and uncertainty.
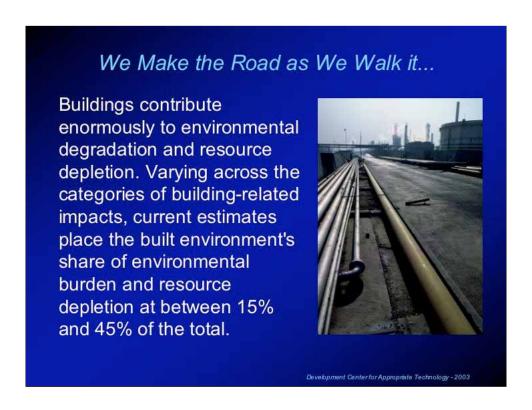
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The challenge is not only that we will be joined by half-again as many people as are here now, but that levels of consumption and the desire for more material wealth are growing in both the developed and developing world alike. Although understandable and in some ways justifiable, this is an ominous trend that our modern cultures mask, encouraging us not to question the ability of the planet to supply the large and ever-expanding material needs of a growing world population and economic systems that depend on continuous growth for their success.

What's Protected and What's at Risk?

In developed countries, building codes do a great job of helping us create buildings that are safe for their occupants. Thus it is easy to believe that we've eliminated or greatly reduced the risks associated with buildings…

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Because our codes do such a good job of enabling us to build buildings that rarely fall down, burn down, trap people in emergencies, electrocute them, expose them to raw sewage, or let them fall from high places, we think we've eliminated or greatly reduced the risks associated with buildings.
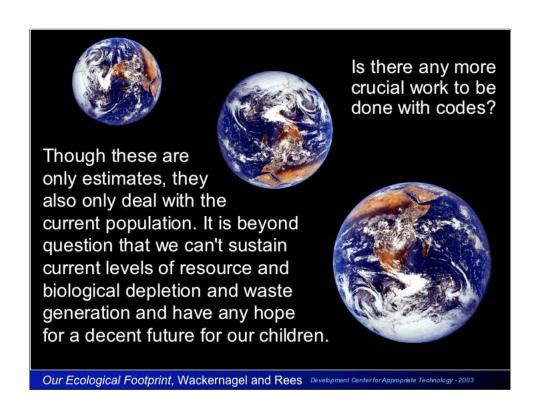
Our Buildings May Be Safe, However…

In fact, we've just moved them in space & time:

- away from the building site into all the natural systems that support life on earth, and

- into the future, to our children and the future generations of all the other species on whose health and welfare our welfare also depends.

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Actually, we've just moved those risks in space and time. We've shifted them away from the building site, out into all the natural systems on the planet, our life support systems. And we've moved them from the present to the future, to our children and grandchildren, and the future generations of all the other species on the planet on whose welfare our welfare absolutely depends.

We Make the Road as We Walk it...

Buildings contribute enormously to environmental degradation and resource depletion. Varying across the categories of building-related impacts, current estimates place the built environment's share of environmental burden and resource depletion at between 15% and 45% of the total.

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The built environment has huge impacts on the environment and resources, representing considerable portions of the total human impact on the planet. Those impacts are a real and serious aspect of the risk that buildings create, thus they are legitimate responsibilities to be addressed by building regulations designed to safeguard public health, safety and welfare.

There exists today a body of research showing that if each person on Earth consumed resources & generated wastes at the rate of the average American and Canadian, we would need two more Earths to sustain that level of human activity.

Where will we find these two other planets?

Our Ecological Footprint, Wackernagel and Rees   *Development Center for Appropriate Technology - 2003*

There's plenty of scientific evidence available today of the danger of our present course. Some of the best estimates suggest that if everyone on earth were consuming resources and generating waste at the rate of the average U.S. and Canadian citizen, we would need at least two more planet earths to sustain that level of activity. Yet we continue to encourage the rest of the world to follow our lead. This is clearly unsustainable.

Is there any more crucial work to be done with codes?

Though these are only estimates, they also only deal with the current population. It is beyond question that we can't sustain current levels of resource and biological depletion and waste generation and have any hope for a decent future for our children.

Our Ecological Footprint, Wackernagel and Rees   Development Center for Appropriate Technology - 2003

Admittedly, these are only estimates, but they are also only based on current world population and consumption levels. The research that has been done makes it abundantly clear that dramatic changes are required in all our human systems if our children and their children are to have any hope of leading decent lives. This won't be easy, but there is no more important or challenging work to be done.

Do Our Codes Serve Everyone's Needs?

This isn't just an environmental issue - for about half the population of the world, our codes remain irrelevant. Too often, where codes *are* enforced, they set a threshold high enough that they deny access to adequate shelter to millions of people.

We need to develop codes that serve the real needs of people in the cultures, conditions, and economic circumstances in which they live, using the resources, building types, and timeframes that they know and that are typically available to them.

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In reality, our codes are not merely irrelevant for the majority of the population living on less than $2 a day, they are a huge problem for them. Because so much international aid comes with requirements that whatever is built be built to modern, typically Western standards, the traditional and indigenous ways of building, which are generally far more sustainable than their modern replacements, become illegal and unavailable. This is much more than an environmental issue. It is equally a social and economic issue. And these are all much more than technical issues - they're equity and ethical issues. We need to support the development of appropriate regulations that are place-based, built on the need for open societies to have the freedom to establish what needs to be done to match the culture, resources, social and economic realities that exist, not based on an idealized vision born in and imposed from the over-developed world - as many people in the third world now refer to developed countries.

Do Our Codes Serve Everyone's Needs?

The industrial revolution is about replacing labor with resources and technology. We're still doing everything we can to accelerate that process, even though we have more and more people and fewer resources to go around.

Favoring labor-efficiency over resource-efficiency - even where labor is abundant and cheap and resources, technology, and capital scarce - directly discriminates against beneficial, labor-intensive, resource-efficient building systems and materials.

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Again, we need to understand the larger context. The industrial revolution has been about increasing human productivity by replacing labor with resources and technology. We've been doing that at an ever-accelerating rate for over 200 years. Even now, with more and more people and fewer and fewer resources to go around we are hard at work replacing labor with technology and resources. Labor is arguably one of our most abundant and renewable resources, yet we are intent on eliminating its use in almost every human activity with inevitable and serious social, economic and environmental ramifications.

In the developed world, labor is expensive, skilled labor scarce and more expensive, and resources, technology, capital, and infrastructure readily available and relatively inexpensive. The abundance of resources and wealth in the developed world is a direct result of the ability of developed countries to extract those resources and take advantage of cheap labor in the developing countries. Yet, in the developing world, labor is over-abundant and cheap, and resources, capital, technology and infrastructure are scarce and expensive. In forcing these places into labor-efficient, resource-, capital-, and infrastructure-intensive ways of building, we both eliminate the most sustainable and appropriate building materials and systems, and create economic, environmental and social problems wherever we do it.

Not Just Wild-Eyed Environmentalists…

"Safety is very important, but we need to think about the responsibilities for our collective safety; especially the welfare of future generations who, it's worth noting, are unable to represent their own interests."

- Bob Fowler, FAIA, P.E., C.B.O., former Chairman of ICBO and founding Chairman of the International Code Council (ICC), former Vice President of the World Organization of Building Officials (WOBO)

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I know that some of you knew Bob Fowler, a real visionary leader in the realm of building codes. Bob was one of the most highly respected and accomplished building officials in the U.S. and the world. Bob and I became close friends and colleagues and he was among the strongest supporters of our efforts to shift to a sustainable basis for building regulation. Bob was killed in an accident a couple of years ago, but I can assure you, that if Bob were alive today, he would be right here, next to me, making these same points. And those that knew Bob know he was no wild-eyed environmentalist. These are not radical ideas, they are deeply conservative ones. Bob Fowler, recognized the validity of this larger perspective as evidenced in this quote.
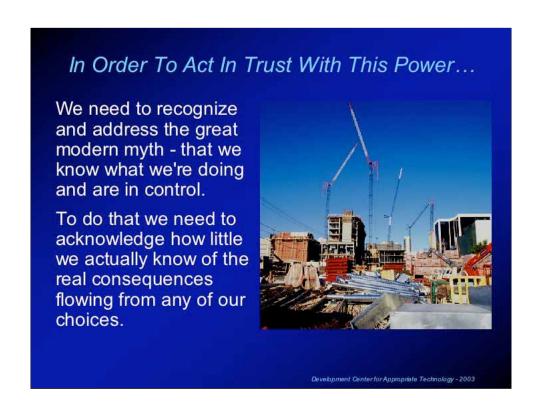
These are Deeply Conservative Values

Edmund Burke, the 18th-century British philosopher, statesman, and father of modern conservatism believed that conservatism is founded on social order based on a "societal contract" between "those who are living, those who are dead, and those who are to be born."

Burke saw this as a partnership promoting science, art, and virtue which could not be achieved by a single generation without deep regard for both the past and those to follow.

Burke believed that government or anyone "possessing any portion of power ought to be strongly and awfully impressed with the idea that they act in trust."

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Edmund Burke was a British philosopher who is widely recognized as the founder of modern conservatism. Burke believed that conservatism is based on a societal contract founded on respect and obligation between the living, those who have gone before, and those yet to be born. Burke believed that for civilization to progress, this partnership had to be recognized and honored because no single generation could achieve anything of lasting significance without a deep regard for both the past and the future. And Burke also believed that "government or anyone possessing any portion of power ought to be strongly and awfully impressed with the idea that they act in trust". Though these crucial ideas seem to have fallen out of favor, they are more true and more important today than ever.

In Order To Act In Trust With This Power…

We need to recognize and address the great modern myth - that we know what we're doing and are in control.

To do that we need to acknowledge how little we actually know of the real consequences flowing from any of our choices.

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How can we act in trust with such power? The first step is addressing the great modern myth - that we know what we're doing and we're in control. The reality is that we know almost nothing of the real consequences of almost anything we do. Here is an ordinary ball point pen. What do I know of the journey the molecules in this pen took to be here today in my hand in this form? I bought a box of twenty of these pens and I'm working my way through it. One day soon this pen will cease to work perfectly and I'll throw it in the trash from which it will proceed to that mythical place "away." I will know as little about the fate of those molecules as I do of their earlier history in this process. How many billion pens a year meet that same fate? And that's just a pen, not a cell phone, not the twenty tons of resources it took to make this laptop computer, not a car, a house, or high-rise office building. Does anyone seriously believe that anyone knows what is going on? That anyone could keep track? That anyone is in control of it?

In Order To Act In Trust With This Power…

We need to have the intention of minimizing unintended consequences, making that part of our decision-making process.

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What is needed is a different mindset. One in which we acknowledge the limits of what we know and what we are able to control, and in which we have the intention of minimizing unintended consequences. That sounds paradoxical, yet it is quite possible to build into our decision making processes questions about what is known and unknown, about how serious or benign different unintended consequences might be, whether different choices take us closer to or farther away from knowing what is really happening.

In Order To Act In Trust With This Power…

We can do that if we change our preferences to doing things as locally as possible, as simply as possible, and doing as little as possible of those things that we know are harmful or about which our knowledge is limited. This is a more effective way to manage risk.

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That process of questioning leads to an entirely different, and far more conservative and sustainable set of criteria for our decision-making. If we care about coping with unintended consequences, we discover a natural preference for doing things as simply as possible, as locally as possible, and doing as little as possible of those things about which we know there are serious risks, or about which our knowledge is limited. There is no more rational approach to managing risk than one based on acknowledging the known and unknown and the degree of risk associated with it.

Simplicity Is Its Own Reward…

Appropriate technology - the lowest or simplest level of technology that can do the job well - in contrast to our assumption that higher technology is always better. It can be high-tech, intermediate-tech, low-tech, or no-tech - or a combination - based on the specific use and real needs.

Appropriateness relates to where technology is used and the cultural, economic, and environmental context.

The ideal is technology that doesn't make people or their communities dependent on systems over which they have no control. This means technologies that enhance the local capacity to meet local needs - a foundation for true security and sustainability.

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The name of my organization is the Development Center for Appropriate Technology. Many people ask what makes technology appropriate? A standard definition of appropriate technology is that it is the simplest or lowest level of technology that you can use to do well what needs to be done. I contrast that with our cultural bias that tells us that higher technology is always better, that there is an obligation to always use the highest level of available technology one can afford, and that when new technology is introduced the old technology becomes obsolete and is no longer useful. The reason we care about the level of technology that is used is that higher levels of technology come with higher levels of unintended consequences and at some point the consequences are not merely unknown, they are unknowable, especially in the time frame in which we must make our choices.

Appropriate technology isn't necessarily low tech. It is the right level of technology for what must be done, based on the specific use and real needs, circumstances, and to the degree that they are knowable, the consequences flowing from its use. It can be high-tech or no-tech or anything in between.

The best definition of truly appropriate technology is that it is technology that doesn't make people or their communities dependent on systems over which they have no control. If we think about this seriously, it means technologies that enhance the local capacity to meet local needs - which is the true foundation for sustainability and for real security.

Codes Should Enhance Local Capacity

If *security* is a goal, strengthening regional and local self-sufficiency is a first principle - for everyone, everywhere!

Enhance the local capacity of communities and people to meet their own needs and we also:
- shorten vulnerable supply lines for goods and services
- create more efficient and resilient systems of supply
- support more robust, durable local economies, and
- support healthier cultural, political, and social structures

Doing things locally shortens and improves the quality of feedback loops. You're much more likely to run into the unintended consequences of your actions.

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If we are interested in codes that don't undermine the safety and security of our communities, we will see that we should not be creating codes that undermine the regional and local capacity to meet local needs. It should be abundantly clear that a problem with the current trends in globalization is that they do exactly that. What should also be clear, from a security and risk management standpoint, is that shortening supply lines, creating more efficient, diverse and localized sources and systems of supply, building healthier, more robust local and regional economies and markets are all keys to building real security and reducing both long-term and short-term risk.

There is an additional benefit to doing things locally, aside from the usual things mentioned like lower embodied energy for transportation and local economic benefits. And that is that the feedback loops are much shorter and much higher quality. You are much more likely to run into the unintended consequences of what you are doing if you do it where you are, rather than a thousand miles away or half way around the world, where you will likely never know anything about what is really happening.

How Do We Integrate this into Codes?

Codes must balance the obvious, immediate, specific risks against the larger, cumulative, longer-term risks. The current system shifts responsibility for dealing with these larger risks to agencies which will never be able to cope with the magnitude of the problem.

To balance them requires integrating solutions into the process by which decisions are made, and through which building is regulated.

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The challenge with codes is to balance all that with all the obvious, specific risks that we are so accustomed to addressing. The way we do it currently avoids responsibility for dealing with these larger risks, shifting them to agencies which can't possibly cope with them or ignoring them altogether. To have any hope of balancing them requires these concerns to be integrated into the process by which decisions are made, and through which buildings are regulated.

How Do We Integrate this into Codes?

English does not contain a suitable word for "system of problems." Therefore I have had to coin one. I choose to call such a system a "mess." The solution to a mess can seldom be obtained by independently solving each of the problems of which it is composed.

— Russell L. Ackoff

Or, more simply put…

Optimizing components in isolation tends to pessimize the whole system.

— Paul Hawken, Amory & L. Hunter Lovins

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I love these two quotes. They actually describe very well a central problem with most building codes - they almost exclusively optimize components of buildings in isolation and in so doing, tend to pessimize not only the building but the larger systems, both human and natural, in which the buildings exist.

Are we Pessimizing the System?

To effectively deal with the "messes" without pessimizing the system, requires an integrated, inclusive approach. This is as true for buildings and the human and natural systems in which they exist as it is for the regulatory systems we create to manage these risks.

Our approach needs to be coherent, integrated, and focused as much on what buildings do,and when and where they do it, as on what they are. This is why performance codes will play such a crucial, transformational role - it's what they do!

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To solve the messes without pessimizing the system, we need a bigger context and a much more integrated approach. This isn't only true for buildings and the human and natural systems in which they're embedded. It is equally true for the regulatory systems we create to manage these risks. We have to keep reminding ourselves that we are dealing with systems - that everything is connected and each action has multiple consequences. Performance codes give us a good start in this direction because they already deal with what buildings do, not just what they are. It is possible to create performance codes that also pay attention to when and where buildings have impacts, even if they're not at the building site or in the timeframes in which we are accustomed to considering. That's why performance codes can play such an important role in this shift toward sustainable building.

3 Steps Toward Managing these Risks

First - understand the current situation; honestly acknowledge the range of consequences and risk flowing from our choices and actions - and accept appropriate responsibility for them.

Next - imagine the qualities of the future we want, and develop clear, integrated, ethical strategies for achieving them.

Then - summon the courage, creativity, strength, cleverness, and perseverance to develop the transitional strategies to get there from here.

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If we are going to responsibly address the reality of the challenges we face in relation to the built environment, we need to do three things. First we have to stop denying what scientists the world over are telling us about the environment, climate change, loss of biodiversity, limits to resources, issues of population growth, etc., and honestly acknowledge the consequences and risks of our choices, accepting responsibility for them.

Second, we need to envision the future that we want, integrating the environmental, social and economic outcomes we believe are crucial to that successful future. And then, we need to develop the transitional strategies that will carry us from where we are to where we need to go. And that won't be easy. It will require a lot of all of us. But there is no more important work to be done.

Addressing the Larger Risks

This will require a new kind of leadership more than new technology. Many current problems are the result of previous technological solutions.

We need leadership that recognizes that the built environment rivals all other human activities in the size and scope of negative impacts on the planet.

We need to see this as a central responsibility for building regulation. Performance codes will be essential in this transformation.

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This transition will require real leadership of a kind rarely seen in recent times. It doesn't require more technological solutions. It requires being clear about what we really are trying to accomplish with that technology, since many of our current problems result from previous solutions to the same or other problems. We must see the magnitude of these issues and the appropriate role that building regulations can play in facilitating, not blocking the shift toward sustainable practices.

How Do We Integrate this into Codes?

We can consider proscriptive, performance-based regulations for those things we want to protect or preserve.

This is a well-known approach to managing behavior. Eight of the Ten Commandments are proscriptions - "thou-shalt-not" statements…

There is greater flexibility in describing what is prohibited, rather than limiting possibilities to what has already been thought of and described.

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Most people focus on prescriptive or performance codes as the two basic choices we have. There is a third; proscriptive codes, which focus on what must not be done, rather than on what must be done. Eight of the ten Commandments are proscriptions - thou shalt not statements. Proscriptions have the advantage of giving wide latitude for what is permissible because they only describe what is off limits. So we could describe what we want to protect or preserve, rather than limiting the possibilities of what might be done to things that have already been thought of and developed.

Addressing the Building Lifecycle

Finally, we might begin to think of building codes *as* a set of principles for what buildings should and shouldn't do…
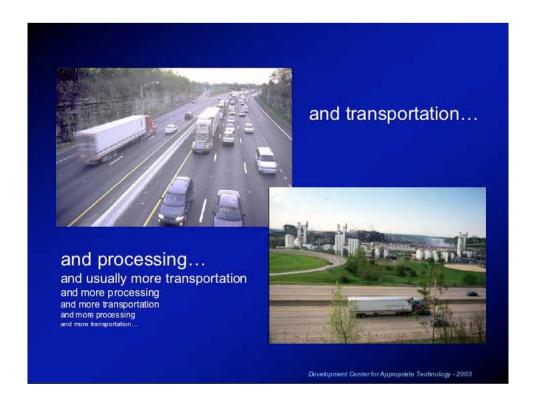
A good first principle would be a corollary of the Hippocratic Oath - that buildings should first do no harm. To consider the harm a building might do we need to look at the building's entire lifecycle…
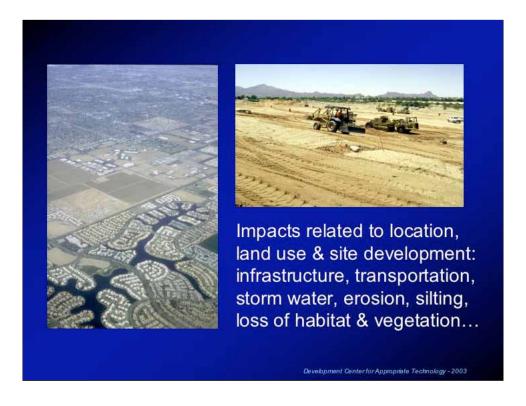
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We could also start thinking of building codes as a set of principles for what buildings should and shouldn't do. And a good first principle would be a sort of corollary to the Hippocratic Oath - that buildings should first do no harm. But to consider the harm a building might do, we would have to go back to the very beginning of the lifecycle of the building.

Resource acquisition…

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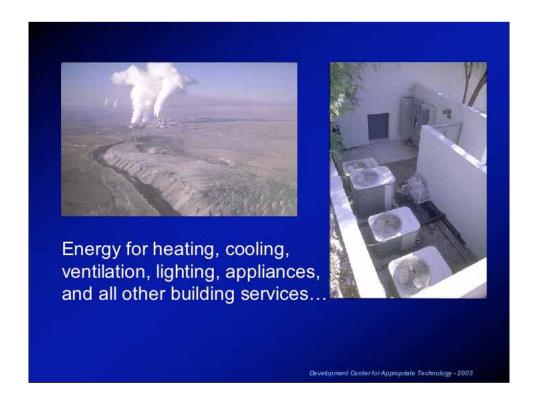We would have to start with the acquisition of resources.

And then the transportation of those resources, their processing, and typically more transportation and more processing and definitely more transportation.
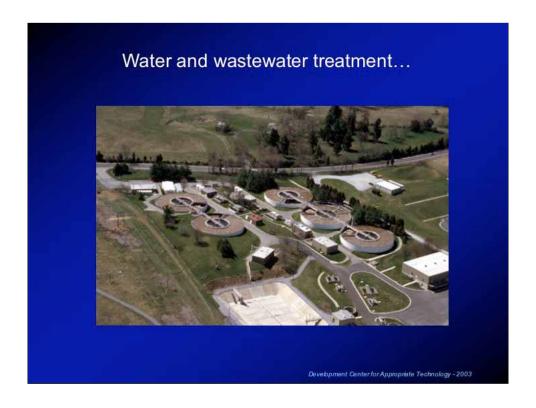
Impacts related to location, land use & site development: infrastructure, transportation, storm water, erosion, silting, loss of habitat & vegetation…

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Then we'd need to consider the impacts on the land from site development and infrastructure, to transportation, and the related impacts to natural systems.

Waste from construction, repair, and maintenance - Construction debris in the U.S. weighs about the same as all domestic refuse…

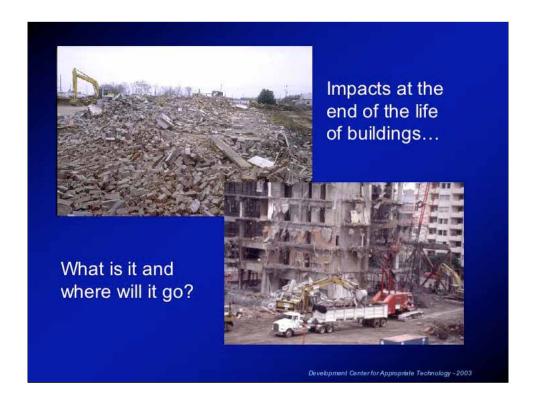Development Center for Appropriate Technology - 2003

And then we'd need to look at the flow of resources through these buildings, not just when being built but through their entire lifetime as they are maintained, repaired and remodeled. Construction in the U.S. generates an enormous quantity of waste. And this too isn't just a problem at the time of construction, but continues throughout the life of the building.

Energy for heating, cooling, ventilation, lighting, appliances, and all other building services…

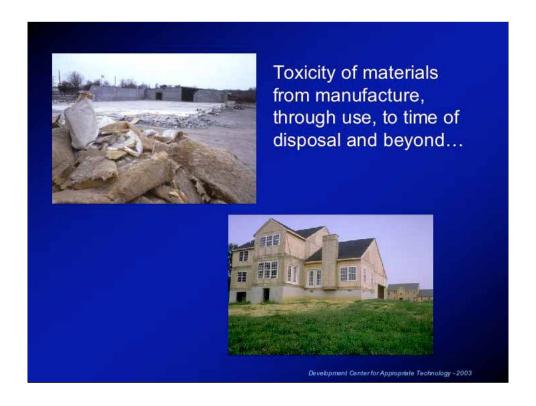Development Center for Appropriate Technology - 2003

Another huge flow of resources through buildings is the energy needed to operate them and everything in them. According to the U.S. Department of Energy's Center for Sustainable Development, buildings account for about 40 percent of the world's total energy use.

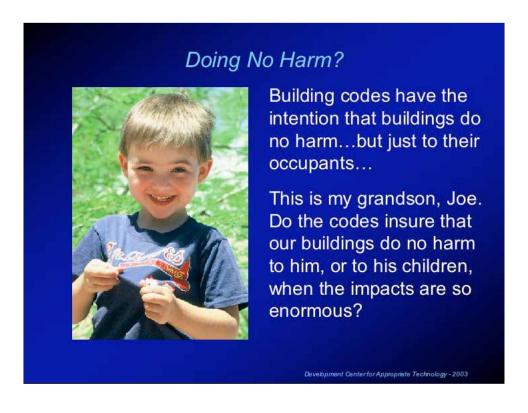And we'd need to look at the very large impacts related to water and wastewater.

Impacts at the end of the life of buildings…

What is it and where will it go?

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Finally, there are the impacts at the end of the life of the building… many of which extend well into the future, beyond the final demolition of the structure.

Toxicity of materials from manufacture, through use, to time of disposal and beyond…

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Some of these extended impacts relate to the toxicity of materials, issues which often are present at every stage of the lifecycle from acquisition through demolition. Some relate to the way buildings are put together making it nearly impossible or highly impractical to reuse or recycle the materials.

Of course it is possible to build with materials that can go back to nature without causing any harm, in fact there is a long history of doing so.

Doing No Harm?

Building codes have the intention that buildings do no harm…but just to their occupants…

This is my grandson, Joe. Do the codes insure that our buildings do no harm to him, or to his children, when the impacts are so enormous?

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Of course it is possible to build with materials that can go back to nature without causing any harm, in fact there is a long history of doing so.

International Building Code 2000 edition

101.3 *The purpose of this code is to* establish the minimum requirements to *safeguard the public health, safety and general welfare* through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property *from* fire and other *hazards attributed to the built environment.*

This doesn't limit responsibility to what happens at the building site, to the narrow timeframe during which buildings are designed and built, or even during which they are operated and maintained.

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This is the purpose statement from the International Building Code, part of the new U.S. family of building codes created by the International Code Council. The highlighted portion of this statement says the purpose of the code is to safeguard the public health, safety and general welfare from hazards attributed to the built environment. It doesn't say those hazards are limited to the building site nor does it limit the timeframe in which those hazards may exist. These issues, as difficult as they will be to deal with are legitimately part of the responsibility for safeguarding the public welfare in relation to the built environment.

The Purpose Versus the Results

All that is the negative way to approach these challenges. Let's ask another question:

Do we just want to prevent the worst things from happening or enable the best things to happen?

There's a big difference in the outcome.

Building departments could begin to become effective community resources for best building practices, partnered with those seeking the most sustainable path.

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Building codes have been traditionally fear-based; they are reactions to disasters and failures of all sorts and they are designed to try to keep those failures from recurring. That is their origin and history. And, similarly, all of what I just talked about is the negative way to look at this set of challenges. We have started asking a different question because we are seeking a different kind of outcome. Do we have codes just to keep the wrong things from happening or do we really want to make sure that the right things happen? There is a very big difference. We believe that building departments and the regulations they enforce could become real community resources in support of the best practices, working together with those seeking the most sustainable outcomes.
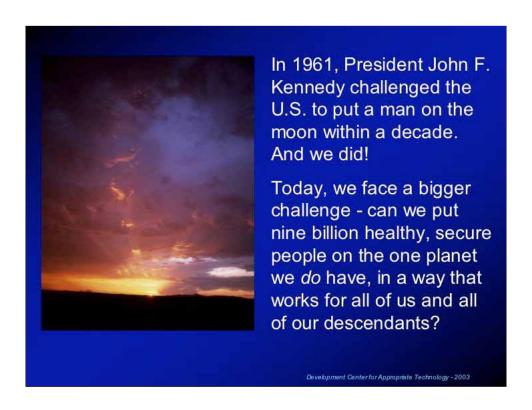
The Purpose Versus the Results

Building codes and building officials stand at a crucial juncture at this point in time. They are gate and gatekeeper for the profound changes that must take place in the very near future.

To remake the built environment into an environmentally, socially, and economically responsible enterprise will require the best performance-based regulations we can create. It will take working together across sectors with a much deeper understanding of both the risks and our responsibility.

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Changing the way we design and build is a crucial part of the shift that is necessary for the kind of future all of us seek for ourselves and our children. Building codes and building officials are the gate and gatekeepers for these profound changes, either enabling or impeding this shift.

Performance-based regulations have a significant role to play in this process, but they are only a part of what is needed. First we must seriously work to understand the full range of risks and acknowledge our responsibility to work together to address these challenges.

The U.S. was challenged by JFK in 1961 to put a man on the moon in a decade and the country responded to that challenge in an extraordinary way and did it in eight years. Our challenge today, is more imperative - can we put nine billion healthy, productive, secure people on the one planet we do have, in a way that works for everyone and for all our descendents?

Let's imagine the reality we want and dedicate ourselves to creating it.

Thank you.

For More Information or to Contact US…

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