

THE 2030 CHALLENGE

**ED MAZRIA
SETS OUT TO IMPROVE
THE BUILT WORLD**

COMPILED BY CHRISTINA KOCH

He can be referred to as the rock star of the green-building industry. Ed Mazria, director of the Santa Fe-based nonprofit Architecture 2030 and senior principal of Mazria Inc., an architecture and planning firm in Santa Fe, has been traveling the country spreading the urgent message that the way buildings are designed is no longer acceptable.

Mazria's eye-opening talks often begin with the astounding statistics about U.S. fossil-fuel requirements; we currently use 100 quadrillion Btus and are expected to increase that amount by 34 percent by 2035. (One quadrillion is equal to 40 1,000 megawatt power plants.) Then he addresses terrifying global-warming predictions: Earth's temperature is expected to rise 2 C (4 F) between 2050 and 2100, which would cause the demise of polar bears and other animals, as well as more severe weather events.

Although human nature often causes us to leave problems to our descendants, Mazria believes without immediate action future generations will not enjoy the life we have today. In response, he created the 2030 Challenge, which provides a template for design professionals and others to protect our planet by designing better buildings. *Eco-structure* recently spoke to Mazria about the 2030 Challenge, the impressive organizations that support the challenge and staying optimistic despite the overwhelming task ahead.

Eco-structure: What is your education and professional background?

EM: I grew up in New York City and graduated from the Pratt Institute [New York] in 1963 with a Bachelor of Architecture. I then spent two



years as an architect in the Peace Corps in Arequipa, Peru, which was tough yet wonderful and very interesting for a young person. I later worked with the firm of Edward Larabee Barnes in New York before completing my master's degree and beginning a teaching and research career at the University of New Mexico [Albuquerque] in 1973.

I did a tremendous amount of architecture and renewable energy research at UNM and later at the University of Oregon [Eugene]. At that time, I became very interested in the field of resource conservation and passive heating, cooling and daylighting design and ended up writing a book called *The Passive Solar Energy Book*. It was a huge success and opened many doors for me as an architect. In 1978, I started the firm Mazria Associates Inc. in Santa Fe, which has evolved during the years to include several partners and many talented architects. We've completed numerous projects focusing

on daylighting and energy efficiency, and I was led to what I am doing today as a direct result of those pursuits.

When did you become involved with the sustainability movement?

During my professional career I always have been involved in the sustainability movement, even before it was called the sustainability movement. A lot of people tell me I was one of the early pioneers—yes, I am getting up there in age but always young at heart. A lot of what I have been saying lately about making buildings more efficient, designing in natural energy systems is the same stuff I was lecturing about in the 70s and 80s. Just back then there wasn't the urgency there is today.

When and how did you come up with the idea for the 2030 Challenge?

Some of the architects in the office started asking me about my book and the possibility of rewriting my book. They came up with the idea—to get me going—that I should conduct Friday afternoon seminars in the office focusing on architecture and energy. They wanted me to teach them everything they thought I knew!

I always liked talking about this information so I did some research, and where I ended up was a surprise for everyone. The discovery that buildings are the single greatest source of greenhouse gases causing global warming was amazing. We knew most buildings were extremely inefficient, but this was a real call to action. The science and facts surrounding global warming presented a very gloomy picture, but we, as architects, planners and building-design professionals, could actually make a difference. This was exciting! That was the beginning of some big changes in my life. I

ecame driven to enlighten others. I started writing and lecturing constantly, and the 2030 challenge just evolved.

For those who may not know what it entails, what is the 2030 Challenge?

The 2030 Challenge is very simply a set of targets that Architecture 2030 has asked the global architecture and building community to adopt. There are three major points:

All new buildings, developments and major renovations must be designed to meet a fossil-fuel-energy consumption performance standard of 50 percent of the regional (or country) average for that building type.

At a minimum, an equal amount of existing building area must be renovated to meet a fossil-fuel-energy consumption performance standard of 50 percent of the regional (or country) average for that building type.

The fossil-fuel reduction standard for all new buildings must be increased to

- 60 percent in 2010
- 70 percent in 2015
- 80 percent in 2020
- 90 percent in 2025

carbon neutral by 2030, meaning no fossil fuel greenhouse-gas emitting energy to operate

What is the baseline with which emissions reductions are being compared?

This has evolved from seeming like a simple number to, in reality, a slightly more complex issue because of the lack of information available for the current energy use of different building types in different areas of the country. Architecture 2030, along with several other leading organizations, including the U.S. Green Building Council [Washington, D.C.]; American Institute of Architects [Washington]; and American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc. [Atlanta], have commended using the baseline statistics available through the U.S. Environmental Protection Agency's Energy Star Web site (www.energystar.gov). The program is called Target Finder with a supplemental program called Portfolio Manager. EPA also is trying to encourage the collection of data at the municipal level to augment the information currently available.

Do you expect the challenge to be adopted worldwide?

The 2030 Challenge, or something similar, must be adopted worldwide to avert a global catastrophe. If the United States was the only country to adopt the challenge, we would be a long way from making the reductions necessary to stop global warming. This is a planetary problem, and every individual and every nation will have to step up to the plate for all to reap the benefits. China and India also must participate because as growth from those nations increases dramatically so will CO₂ emissions unless they take similar action.

In terms of global education, Architecture 2030 has considered the difficulty of this from the beginning, and we have begun to think about how we can initiate such a far-reaching campaign. We began with the Architecture 2030 Web site, www.architecture2030.org, which defines the global challenge and describes the basics about where we are and what we, as architects and community leaders, can do to prevent dangerous climate change.

I also have lectured worldwide, and many countries have expressed great interest in what we are doing; the Royal Architectural Institute of Canada [Ottawa] recently has adopted the

2030 Challenge. Britain, Sweden, the European Union and several other countries have initiated building sector plans of their own. In February, we conducted the Global Emergency Teach-In and reached thousands of people via Webcast within and associated with design education in the United States and around the world. We always are searching for inroads into other areas of the globe where the 2030 targets will make a difference.

What are the strategies you recommend to meet the challenge?

We have been advocating three basic strategies to meet the challenge. The first step, and what we consider the most important, includes planning strategies and building design. These mostly are passive strategies that require little or no extra initial cost when done correctly. They include passive heating and cooling, daylighting, shading, natural ventilation, fenestration selection, location and size, building orientation, shape and color, and materials selection, as well as smart growth, density and pedestrian-oriented development. These issues must be addressed first; otherwise steps two and three become difficult and costly.



The second step is adding building technology. These are active strategies that incorporate the latest technological advances. They include solar-hot-water heating, photovoltaic electricity generation, microturbine wind power, geothermal and biomass options, moveable insulation and mechanized shading devices. Energy management systems also are very important, as well as energy-efficient systems and appliances. We also can include in this category neighborhood scale and wind-, solar- and biomass-power generation.

The last choice, which should only be used after strategies one and two have been exhausted, allows the purchase of renewable energy through Renewable Energy Credits or Green Tags. This option should not exceed one-fifth of the building reduction requirement.

What organizations have signed on to support the challenge?

The 2030 Challenge has been adopted by the 78,000-member AIA, USGBC, RAIC, U.S. Conference of Mayors (for all buildings in all cities per Resolution No. 50), Rocky Mountain Institute [Snowmass, Colo.], and individual cities and counties. It has been supported by ASHRAE and endorsed by the American Solar Energy Society [Boulder, Colo.] and Society of Building Science Educators. The International Council for Local Environmental Initiatives [Toronto] has incorporated the 2030 Challenge into its Statement of Action. The challenge also has been integrated into EPA's Target Finder and promoted by Gov. Bill Richardson [D-N.M.] and Mayors Richard Daley [Chicago], Martin Chavez [Albuquerque], Manny Diaz [Miami] and Greg Nichols [Seattle], among others. The international architecture community also has signed the Las Vegas Declaration recognizing the "great responsibility placed on the architecture profession to do all it can to influence a major reduction in the level of carbon emissions that result from the creation and life-cycle of the built environment." So we are making great progress!

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How do these groups intend to accomplish the challenge?

Governments are passing or preparing to pass legislation that will make the challenge's reductions law. AIA is creating the Toolkit and the Green Cities Kit, which will outline strategies and measures to make reductions possible for all buildings and communities. EPA has incorporated the challenge targets of 50, 60, 70, 80 and 90 percent directly into Target Finder to make identification of the baseline accessible to everyone. USGBC is incorporating the challenge targets into LEED Silver, Gold and Platinum levels of achievement. It also is developing an educational outreach program. ASHRAE is developing a special publication that is a code-adaptable performance standard that will build on its 90.1 Appendix G. All these measures are very exciting and move us closer every day to the real reductions we need to solve this crisis.

How can architectural firms and individual architects/engineers get involved?

The greatest contribution any individual can make is to accept the 2030 Challenge within his or her own practice and fully commit to the reductions. There are many ways to get there and much information available from many sources, including the organizations who have

adopted and supported the challenge, to guide the way. A serious commitment from every design professional will get us there faster than legislation or bureaucracy intervention.

What would you like to see done to ensure the challenge requirements are met?

Unfortunately, some sort of oversight will be necessary to ensure the requirements are met. However, any oversight must be coupled with incentives to be truly successful. That said, there are several design programs available that allow professionals to assess their projects during the early stages of design like E-Quest. Or you can send your drawings free to Green Building Studio [Santa Rosa, Calif.] for an energy analysis. There are other programs that will need to evolve to incorporate this feature. There also are many independent contractors available who have expertise with software that can assess designs and provide certification that reductions will be met. Architecture 2030 would like to see governments require this type of certification directly from design professionals or a third party. Educators must become more aware of the issues so they can teach students how to design buildings that engage the environment. We also would like to see educational campuses fully adopt the 2010 Imperative (www.2010imperative.org) and take the lead by eliminating the need for energy derived from the burning of fossil fuels within their facilities by 2010.

How do you remain optimistic that we can meet the 2030 Challenge?

Several months ago we were having a tough time, and we were getting pretty distressed. Then one day things turned around. I cannot tell you how many times this has happened nor how many times it will happen before we reach our goals. We stay clear and committed no matter what happens and never give up because we know that this absolutely needs to happen if our children and grandchildren are to inherit a planet similar to the one we have enjoyed.

▶ WHAT DO YOU WANT TO KNOW? It's your turn to ask the questions!

Is there something you want to know about the 2030 Challenge? Submit a question to Ed Mazria, director of the Santa Fe, N.M.-based nonprofit Architecture 2030 and senior principal of Mazria Inc., Santa Fe, through *eco-structure's* Web site, www.eco-structure.com, by March 19. Selected questions and answers will appear on the site April 1.

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