Lincoln Barbour

SHADES OF GREEN 2030 PALETTE

Local architect Edward Mazria initiates a free online exchange of sustainable building information

By Nancy Zimmerman

The fastest way to paralyze well-meaning climate-change believers to the point of inaction is to stuff their heads with alarming facts and expect the resulting outrage to spur them into action. With so many doomsday scenarios around these days, it is pretty easy to get discouraged. And in the face of daunting challenges like accelerated global warming due to unabated CO_2 emissions, it becomes equally easy to assume that, absent the political will of some of our national elected leaders to find a way out of this mess, there is not much that can be done. >

2030 Palette SWATCH: Solar Shading. Large, wood-framed glass windows bring light and views into this elementary school classroom in Oregon. The intermediate light shelf protects students from direct sunlight and glare while bouncing the light deeper into the space.

That is a misguided assumption, according to Santa Fe architect Edward Mazria, who can recite those doomsday statistics with the best of them: scientists have determined that 350 parts per million (ppm) of CO_2 in the atmosphere is the point beyond which our climate becomes dangerously unstable, but we have already reached 400 ppm, with no end in sight to continued increases. According to the U.S. Energy Information Administration, on a worldwide basis we consume about 542 quadrillion BTUs of energy annually, 80 percent of which comes from burning fossil fuels like oil, gas, and coal, and our global energy consumption is projected to increase to 722 quads by 2030 to accommodate population growth and migration to urban areas. Even if we were to double our production of clean energy, we would not be able to accommodate that increase, let alone reduce our overall CO_2 emissions to the relatively stable level of 350 ppm.

But Mazria remains upbeat about our ability to reverse these disturbing trends, and he has spent the past decade leading the charge to do just that. "Buildings and urbanization are the problem, and buildings and urbanization are the solution," he says, citing the fact that urban environments consume more than 70 percent of all the energy produced in the world today. In the U.S., buildings use almost half of all energy consumed, with 77 percent of all the electricity produced going just to operate them. "Solve the building and urban development problem, and you've basically solved the emissions problem."

In 2006, Mazria issued the 2030 Challenge, an initiative designed to encourage architects, builders, and planners to commit to reducing the fossil-fuel energy consumption in all new buildings and major renovation projects by 50 percent, with the goal of reaching carbon neutrality by the year 2030.

Response to the Challenge was gratifying and widespread. Initially adopted by more than 160 architecture firms, it currently counts 52 percent of all U.S. architecture firms as signatories. Among the organizations on board are the American Institute of Architects, the U.S. Conference of Mayors, the U.S. Green Building Council, the American Society of Interior Designers, and the Royal Architecture Institute of Canada. In 2007, Congress passed the Energy Independence and Security Act, one provision of which required all federal buildings to meet the Challenge's energy performance standards from 2010 on. A companion initiative, the 2030 Challenge for Products, seeks to reduce the carbon-equivalent footprint of products by 30 percent below the product category average by 2014, increasing that reduction to 50 percent by 2030.

Seattle, Pittsburgh, Los Angeles, and Cleveland have established

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2030 Palette SWATCH: Parks. Darling Quarter is a major three-acre placemaking project in Sydney, Australia, centered by a public park and innovative children's playground. Almost an acre in size, the park connects to pedestrian boulevards and provides a key area for social activity and recreation.

Florian Groehn

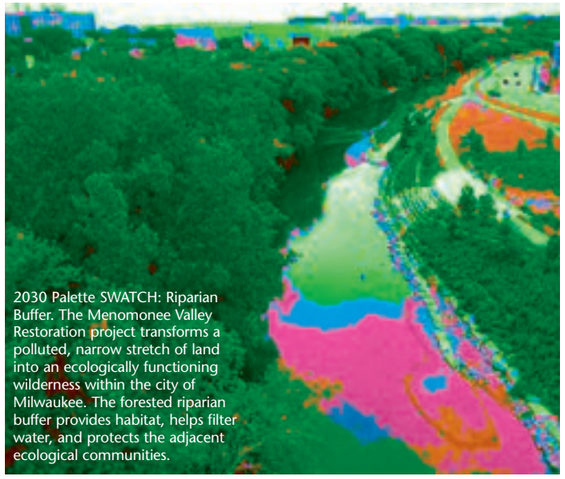
2030 Districts to meet the energy, water, and vehicle emissions targets established by the 2030 Challenge for Planning. The Districts entail public-private partnerships in designated areas that make it possible for property owners to join with local governments, businesses, and community stakeholders to create business models for urban sustainability. Seattle also formed the 2030 Districts Network, which offers an online toolkit to help interested cities organize their own community efforts to achieve sustainable urban planning and construction. The District movement is spreading rapidly, with Denver getting ready to launch its 2030 District and new ones now in the formative stages in San Francisco, Phoenix, Dallas, Fort Worth, Ithaca, Ann Arbor, Stamford, Detroit, Syracuse, and Toronto.

With these projects underway and rapidly gaining traction, Mazria has now launched a far-reaching initiative to make it easier for architects and designers to achieve carbon neutrality. Called the 2030 Palette, it is an interactive online platform that puts the principles and actions behind low-carbon and resilient built environments at the fingertips of architects, planners, and designers worldwide.

The undertaking, which has been three years in the making, is vast and complex, but its framework is simple and user-friendly. "We've structured this as a network of interrelated elements called Swatches," explains Mazria, "which provide a huge amount of information in a format that's well-organized and accessible." He stresses the visual, intuitive nature of the Palette. Charts, maps, and graphs provide much of the information, obviating the need for a lot of text. Each Swatch also contains a section on tools and resources that cites publications and websites that users can reference for still more information.

"We've broken down the entire built environment into its basic components," Mazria says, "starting with regions, then moving to cities and towns, districts, building sites, and finally individual buildings. Each Swatch shares details of a successful project, offering recommendations, rules of thumb, and specific examples of problems that have been solved, as well as photographs and information about how it's been done."

The goal of the Palette, he says, is to curate the best information on sustainable planning issues and make it available free of charge. "This is important," notes Mazria, "because we need to get a handle on how much building and rebuilding will go on throughout the world over the next two decades. It's been estimated that it will be about 900 billion square feet of construction. That's more than three-and-a-half times all the buildings that



2030 Palette SWATCH: Riparian Buffer. The Menomonee Valley Restoration project transforms a polluted, narrow stretch of land into an ecologically functioning wilderness within the city of Milwaukee. The forested riparian buffer provides habitat, helps filter water, and protects the adjacent ecological communities.

exist in the entire United States today. Not only that, we will need to build out all the new infrastructure required to accommodate that much square footage."

Despite the staggering scope of all this building, Mazria expresses optimism. "This is a huge opportunity. If we get it right, we can solve the emissions problem that has made climate change a crisis," he says. "But unless we have a whole new plan, a framework, we'll lock in a huge amount of energy consumption and emissions."

The 2030 Palette is just emerging from its beta stage, in which about 2500 people from around the world agreed to test its usability, send back data, and offer suggestions. "There are also about 30 to 40 'super users,' people we've identified as having tremendous expertise in the subject matter, who weigh in with their knowledge," says Mazria. For example, colleagues at the University of Nevada, Las Vegas, developed stack ventilation design strategies—where air is driven through a building via vertical pressure differences created by thermal buoyancy—and sent them to Mazria and his team to be integrated as a Swatch. "Our 'extended family' develops and provides information, which is then reviewed, curated, graphically formatted, linked, and cross-referenced," he explains. "Basically we're developing visual language for the entire built environment."

Once the information makes it into a Swatch, it becomes a reliable resource for anyone using the site. Regional Swatches address critical issues like habitat corridors, sea-level rise, and animal migration patterns. We need plant buffers in riparian habitats so we do not destroy streams and rivers when we develop these areas, but how wide should they be? A Swatch exists to answer that question. Other Swatches focus on resilient development that can manage growth and coexist within the ecosystem, like settlement areas with clearly defined boundaries to limit sprawl and protect against habitat fragmentation.

At the city level, Swatches look at planning issues such as urban infill, new growth areas, heat island mitigation, parks, and urban bikeways, delving into topics like the adaptive reuse of existing and historic structures, mixed-use development, transit-oriented development, and energy-efficient upgrades. For districts, the Swatches examine the intersection of land use and mobility issues within a defined setting. Site Swatches consider location and climatic conditions, integrating issues of microclimate, vegetation, water, and site stability. Swatches pertaining to buildings contain comprehensive information on various types of heating and cooling systems like solar shading, thermal storage walls, evaporative cooling towers, and daylighting.

2030 Palette SWATCH: Solar Shading. The large undulating overhang at this secondary school in Dano, Burkina Faso, protects the building's walls and windows from direct sunlight while helping to direct air currents for natural ventilation.

Débédo Francis Kéré

Rather than promoting no-growth, the 2030 Palette shows us how to manage growth in such a way that we can continue to live our modern lives. Scheduled to be unveiled to the public at the Greenbuild International Conference and Expo in Philadelphia in November 2013, the Palette has generated a great deal of interest. "This is a powerful tool for putting the principles and actions behind low-carbon and resilient built environments at the fingertips of the people who are literally shaping our world," says Architecture 2030 Director of Communications Peter Chapman, who leads development of the 2030 Palette. "The 2030 Palette reaches a broad audience across the spectrum of planning and architectural design. The response has been enthusiastic across the board."

2030 Palette SWATCH: Transit-Oriented Development. As part of a larger transit-oriented effort, Portland has successfully leveraged the development of a streetcar network to revitalize rundown neighborhoods, increase local jobs, and reduce CO_2 emissions from vehicle traffic.

Patrick Dirden Photography

Adds Vincent Martinez, Seattle-based director of research and operations for Architecture 2030, who has been involved with the city's 2030 District since its inception, "The Palette will be helpful and informative to larger planning decisions that will eventually come from the formation of the shared vision and metrics established by 2030 Districts. The 2030 Districts Network will inform and be informed by the Palette as it moves to recommendations around planning and design at the city/district scale."

What differentiates this approach is how it tackles the problem of CO_2 emissions from the demand rather than supply side. Mazria points out that the scientific community frames the solution as requiring a reduction in the emission of greenhouse gases by substituting non-CO_2-emitting energy sources for fossil fuels. "They're putting the focus on the supply side of the issue: how much we're burning, project to burn, and have left to burn, and how that will impact our planet," he says. "At Architecture 2030, we look at the demand side of the built environment. By dramatically reducing demand, and through careful planning, design, and harnessing site renewable resources—solar, wind, and water—we can substantially eliminate the need to burn fossil fuels. The 2030 Palette provides the guiding principles for this approach, which can also alleviate the political and economic pressure to dig up and burn unconventional fossil-fuel reserves like gas and shale oil."

The movement is particularly contagious among the new generation of architects, planners, and builders, a cohort undaunted by political roadblocks and eager to confront the challenges of reshaping the built environment. Where Mazria abandoned a five-decade-long career as an architect in order to devote his time to the urgent goal of achieving carbon neutrality in the build-

EDI architecture of Albuquerque works to 2030 Challenge standards. Their multipurpose building (ePod) of Cottonwood Valley Charter School in Socorro, NM, is sustainably designed.

Architecture 2030's creative ideas and expertise have helped keep New Mexico at the forefront of the movement toward a sustainable future. Since the earliest days of the 2030 Challenge, local businesses and individuals have provided enthusiastic support. Some 41 entities throughout the state—architecture firms, builders, engineers, realtors, designers, developers, and others—have signed on so far, designing projects that meet or exceed the Challenge targets for reductions in CO_2 emissions.

In 2006, Santa Fe County passed a resolution to meet the targets for county buildings, and former Governor Bill Richardson issued an executive order requiring all new state buildings and major renovations to meet the initial 50 percent energy reduction target. Albuquerque's former mayor, Martin Chávez, was an early champion, and he introduced a resolution that led to the Challenge's adoption by the U.S. Conference of Mayors. Santa Fe was the first to accept that resolution for public buildings, and in 2009, the city passed the Residential Green Building Code for single-family residences.

Progress continues. The Albuquerque chapter of the American Institute of Architects recently completed the ten-part AIA+2030 Professional Education Series, providing training to local architects to design to Challenge targets, and discussions are underway among local stakeholders to establish an Albuquerque 2030 District. Architecture 2030 is working with stakeholders and policymakers to craft legislation that would incentivize renovation and construction to meet zero-net-energy standards. Ed Mazria and the 2030 staff offer local lectures and have made presentations at the University of New Mexico, the Museum of New Mexico, and the Santa Fe Community College.

ing sector, his high-powered staff requires no such shift. Following Mazria's example, they are pursuing careers based on the belief that positive change is readily achievable, and they are putting that belief into action.

"Our staff draws from incredibly diverse professional and educational backgrounds, from architecture, engineering, and economics to nonprofit management and campaign organizing," says Chapman. "We are all polymaths, driven by the urgency of our mission to transform the built environment." Martinez, for example, was a recent graduate with a degree in structural engineering when he first learned of Mazria's organization. "I was excited when I read about Ed's work on climate change," he says, "so I volunteered to work for him part-time." That led to his current position as a leader in creating a carbon-neutral built environment.

The staff members are experts in their fields, and they continually respond to questions from the public and provide critical information through a variety of media. "We don't give advice on questions related to specific construction and design projects or products," explains Chapman, "but we do help connect people to resources in their areas."

Grants and donations make the work of the nonprofit possible, and even small donations from individuals can make a difference, as they bolster the group's capacity to take on ambitious initiatives like the Palette. The goal is to achieve a high quality of life worldwide while finding a sustainable ecological balance.

"People are going to go to work, shop, go to church, take vacations, and heat, light, and cool their homes, offices, grocery stores, malls, and airports," Mazria concludes. "There will be huge pressure to keep all that running. What we can do is design a built environment that consumes less energy in a smarter way. The 2030 Palette provides the tools to achieve that outcome."

architecture2030.org
2030palette.org
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