REGENERATIVE DESIGN FOR THE FUTURE

Although environmentally sustainable design options are becoming more common in new buildings, true sustainability in the longer term may involve a big rethink in design approach.

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Conventional building design in New Zealand has resulted in a built environment with wide-ranging negative environmental impacts. It is responsible for half the country’s waste, up to 40% of all materials used, a quarter of all water and energy consumed and a fifth of greenhouse gas emissions (not including embodied energy in materials).

Most existing and newly constructed buildings take into account few, if any, environmental sustainability issues in the design or use of the building.

Eco-efficient design not true sustainability

‘Business as usual’ in our built environment includes some green or high-performance building design, often termed eco-efficiency. Eco-efficiency is the concept of creating the same or better outcomes while using fewer resources and producing less waste and pollution.

Although eco-efficient design is an improvement on conventional design, it still results in negative environmental impact. The outcome of reducing rather than reversing negative environmental impact will be that the ecosystems that support healthy human communities and economies continue to degrade over time, but presumably at a slower rate.

Increases in the uptake of eco-efficiency are to be encouraged. But are they enough to bridge the gap between existing built environments and truly sustainable ones? Given the seriousness of issues such as climate change, eco-efficiency may only be a short-term response.

Regenerative built environments

The goal of a truly sustainable built environment is ecological and community regeneration. Success is measured by improvements in health and wellbeing for humans, other living beings and ecosystems as a whole. Regenerative development for the built environment could become a conduit for producing resources and energy, remedying past pollution and transforming and filtering waste into health-giving resources.

A systems-based approach is crucial to regenerative development. Buildings are not considered as individual objects, but rather are designed to become parts of larger systems, allowing mutually beneficial interactions between the built environment, the living world and human inhabitants over time.

Rethinking design

So how can we change to building environments that regenerate the capacity for ecosystems and communities to thrive?

First, we need to expand our idea of what constitutes the built environment and what its goals should be for ecological performance. Regenerative development acknowledges humans as an integral part of ecosystems and aims to repair the capacity of ecosystems to function at optimum levels without on-going human intervention.

This reflects a shift in designing the built environment from human-only oriented design that has a focus on improving efficiencies, to a systems approach. Comparing the benefits of eco-efficiency and regenerative design can help this rethink process (see Table 1).

Benefits of regenerative development

Regenerative development has key differences to conventional development. Ecological health improves rather than degrades, and the place-based, integrative and participatory design methods ensure that significant community health and wellbeing benefits accrue. The

The move to a truly sustainable built environment is a long-term process that will require a major shift in thinking.
potential result is healthier, more resilient and more equitable communities.

Another key benefit is the emphasis on understanding local traditions and indigenous knowledge, which can preserve or create cultural identity. This is particularly significant in New Zealand given the importance of tangata whenua culture, traditions and knowledge of place.

Regenerative development would also contribute towards offsetting the on-going negative environmental impact of the existing building stock in its transition to better environmental performance.

These aspects of regenerative development could mean greater acceptance of new development by the public and therefore faster transformation of the built environment. In turn, a more adaptable and resilient built environment is a potentially useful strategic response to climate change.

Challenges lead to opportunities

The main challenges in implementing regenerative development are around the current lack of an integrated approach and the scarcity of completed examples to provide quantifiable evidence of the benefits of regenerative built environments.

The technology and expertise necessary to implement such ideas exists, so developing the concepts and testing them in built form presents an opportunity for New Zealand.

In the long term, a regenerative approach to the built environment that integrates with ecosystems will increase the chances of a continuous suitable environment for humans (and other species).

Although this may be difficult to test currently, development that aims to repair and integrate with ecosystems is more conducive to positive healthy outcomes than that which only slows the rate of degradation.

A Ministry for the Environment discussion document entitled ‘Rethinking our built environment’ explores regenerative and related cutting-edge development concepts for the New Zealand context, providing case studies and further resources. To download, see www.mfe.govt.nz/publications/sus-dev/.

Creating regenerative development is all about looking at the bigger picture and how whole systems work, rather than focusing on buildings as separate entities. A good way to do this is to:

- Understand the whole system or master pattern of place beyond site boundaries. Translate these patterns into design guidelines.
- Understand and base design on local reality (both ecological and cultural) rather than theory alone.
- Understand and align the human aspirations of a project. Understand that the diversity and uniqueness of each place (socially, culturally and environmentally) is crucial to the design. Use this to define the project and to create a sense of place.
- Leverage and understand relationships and systems.
- Use multi-disciplinary knowledge and design teams.
- Design to allow complexity and on-going feedback and dialogue processes that allow the development to evolve over long time periods.
- Use integrated and participatory design and construction processes.
- Conserve, restore and regenerate ecosystems. Seek to create or restore the capacity of ecosystems and biogeological cycles to function without human management.

### Table 1: Benefits of eco-efficient and regenerative design.

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<th>Eco-efficiency</th>
<th>Regeneration</th>
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Works within current mode of thinking
Reduced environmental impact
Increased human physical health
Increased psychological wellbeing
Reduced economic costs (over life cycle)
Increased economic value of projects
Increased innovation in projects
Positive environmental outcomes
Building/development becomes a potential source of income
Manageable and strategic approach to global issues such as climate change through a place-based approach
More integrated and therefore accurate knowledge of place
Mutually beneficial relationships between people and place
Increased robustness, flexibility and adaptability in the built environment
Creates stronger, more equitable communities