SUSTAIN CE

INTERGRATION OF SUSTAINABLE DESIGN AND CIRCULAR ECONOMY CONCEPTS IN CIVIL ENGINEERING CURRICULA

O5: GUIDELINES AND POLICY BRIEFING FOR RAISING AWARENESS

D3: POLICY BRIEFS FOR QUADRUPLE HELIX STAKEHOLDERS

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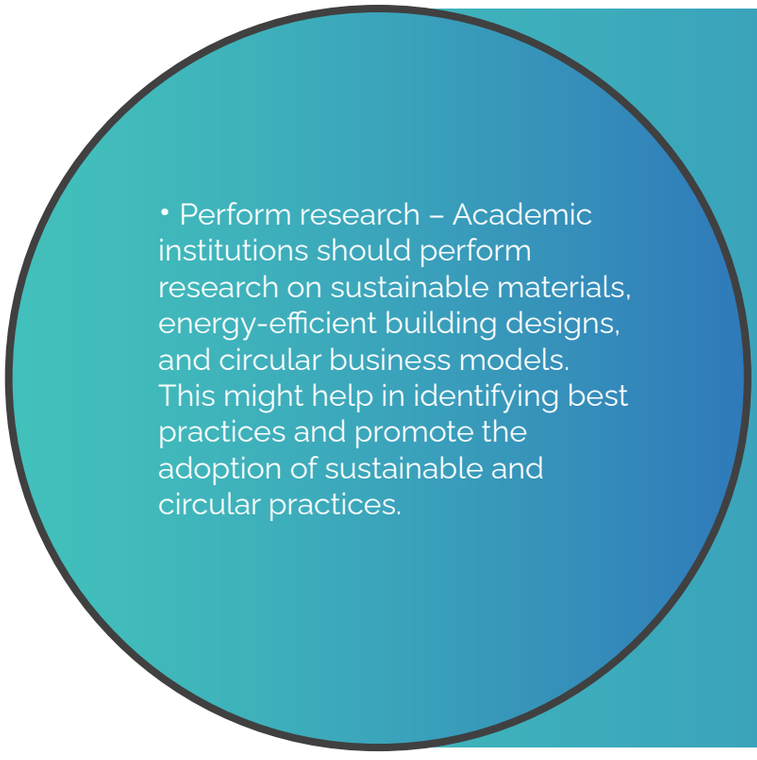
1. Policy Briefs for Academia

• Incorporate sustainability into curriculum – Offer courses and programs that focus on sustainable development and circular economy practices in the construction sector, civil engineering and infrastructure. Including courses on sustainable materials, energy-efficient building designs, and circular business models. By providing students with the knowledge and skills needed to promote sustainability, academic institutions can help to build a more sustainable construction sector and infrastructure sectors.



• Perform research – Academic institutions should perform research on sustainable materials, energy-efficient building designs, and circular business models. This might help in identifying best practices and promote the adoption of sustainable and circular practices.

• Industry collaboration – Partnering with construction companies to develop sustainable building materials or energy-efficient building designs. This might contribute to bridge the gap between research and practice and promote the adoption of sustainability and circular economy practices in the construction and infrastructure sectors.

• Provide training and professional development – Academic institutions can provide training and professional development opportunities for construction professionals to promote sustainable development and circular economy practices. This can include workshops, seminars, and online courses on sustainable materials, energy-efficient building designs, and circular business models.

• Host conferences and workshops – Academic institutions can host conferences and workshops to bring together experts and stakeholders to discuss sustainable development and circular economy practices in the construction and infrastructure sectors.

• Foster interdisciplinary collaboration – Such as collaboration between engineers, architects, materials scientists, and business experts to develop sustainable building materials, energy-efficient building designs, and circular business models.

• Provide outreach and education to the community – Organise public lectures, community workshops, and educational programs for schools and community organizations.

• Develop partnerships with local governments – Providing technical assistance, conducting research, and developing policies and regulations to promote sustainable development and circular economy in the construction sector.

• Promote innovation – Providing funding and support for research and development such as funding for student-led projects, entrepreneurship programs, and incubators for sustainable and circular construction start-ups.

• Encourage life-cycle thinking – Promote the use of life-cycle assessment tools and incorporating life-cycle analysis into the curriculum. By considering the full life cycle of a building, from materials sourcing to end-of-life disposal, designers and builders can make more sustainable choices.

• Develop case studies – Academic institutions can develop case studies of sustainable construction projects to highlight best practices and demonstrate the benefits of sustainable development and circular economy practices. These case studies can be used in the classroom and shared with the public to promote sustainable and circular economy in construction and infrastructure.

2. Policy Briefs for Government

• Set clear targets and regulations – Targets such as requirements for buildings to meet certain energy efficiency standards, use sustainable materials, and reduce waste. Regulations should also be put in place to ensure that construction projects comply with these targets and requirements.

• Provide incentives for sustainable practices – Incentive such as tax breaks, grants, or other financial incentives for companies that use sustainable materials, promote energy efficiency, or reduce waste. This can help encourage companies to adopt sustainable practices even if they are not required by regulations.

• Foster collaboration between stakeholders – Such as collaboration between architects, engineers, builders, and suppliers to share best practices, innovations, and resources.

• Promote the use of sustainable materials – Providing information and resources on sustainable materials, promoting the development of new sustainable materials, or requiring the use of sustainable materials in construction projects. Governments could also work with the private sector to create markets for sustainable materials and encourage the development of sustainable supply chains.

• Encourage the adoption of circular economy practices – Promoting the reuse and recycling of materials, encouraging the use of renewable energy sources, and promoting the adoption of circular business models. As well as collaboration between governments and the private sector to create markets for circular products and services.

• Improve data collection and monitoring – Developing data collection systems and metrics to measure energy efficiency, resource use, and waste reduction. Set requirements for construction companies to report on their sustainability performance to improve transparency and accountability.

• Encourage sustainable urban planning – To promote the use of sustainable materials, energy-efficient building designs, and circular economy practices in the construction sector. This could include promoting compact and mixed-use development, green building codes, and smart city technologies that promote sustainability.

• Implement sustainable procurement policies – Requiring the use of sustainable and recycled materials, encouraging the adoption of circular business models, and promoting the use of renewable energy sources.

• Promote education and awareness – Developing public education campaigns, promoting sustainability training programs for construction professionals, and integrating sustainability into school curricula. By raising awareness and building capacity, governments can help promote a culture of sustainability in the construction sector.

• Promote community engagement – Engaging with local communities to identify sustainable construction practices that meet their needs, promoting the use of local and sustainable materials in construction projects, and involving community members in the design and planning of sustainable buildings and infrastructure.

• Support sustainable waste management – Including regulations and incentives for the reuse and recycling of building materials, the reduction of waste in construction projects, and the development of sustainable waste management infrastructure. Promotion of the use of waste-to-energy technologies to generate renewable energy from construction waste.

3. Policy Briefs for Industry

• Adopt sustainable building material – Adopting sustainable building materials such as recycled or reclaimed materials, sustainable wood, and low-carbon concrete. This can help reduce the environmental impact of construction materials and decrease the carbon footprint of buildings.

• Incorporate energy-efficient building design – Incorporating energy-efficient building design, such as passive solar heating, green roofs, and smart building automation systems. Energy-efficient buildings can help reduce the carbon footprint of the building sector and lower energy costs for building occupants.

• Adopt circular business models – Adopt circular business models such as building material reuse and recycling, and product-as-a-service models. This can help reduce waste and create new business opportunities in the circular economy.

• Implement sustainable construction practices – Implementing sustainable construction practices such as green building certifications, sustainable site management, and sustainable building operations and maintenance. These practices can help reduce the environmental impact of the construction sector and improve building performance.

• Stakeholder Collaboration – Collaboration with stakeholders such as policymakers, academic institutions, and local communities. Collaboration can help create a shared vision for sustainable and circular practices in construction and infrastructure and promote the adoption of sustainable policies and regulations.

• Invest in renewable energy – Investing in renewable energy sources such as solar, wind, and geothermal. This can help reduce the carbon footprint of the construction sector and provide a reliable source of clean energy for buildings.

• Adopt sustainable supply chain management – Adopting sustainable supply chain management practices such as responsible sourcing, supplier diversity, and green transportation. This can help reduce the environmental impact of the construction supply chain and promote sustainable practices throughout the industry.

• Prioritize waste reduction – Implementing sustainable waste management practices such as recycling and composting. This can help reduce waste and promote the circular use of materials in the construction industry.

• Encourage green infrastructure – Encouraging the use of green infrastructure such as rain gardens, bioswales, and green roofs. Green infrastructure can help reduce the environmental impact of buildings and improve the health and well-being of building occupants.

• Support sustainable innovation – Supporting sustainable innovation such as the development of new building materials, energy-efficient technologies, and circular business models. This can help drive innovation and create new business opportunities in the construction industry.

• Implement life-cycle assessments – Implementing life-cycle assessments (LCAs) to evaluate the environmental impact of building materials and products throughout their life cycle. LCAs can help identify opportunities for material and energy efficiency and inform sustainable design decisions.

• Develop sustainable building codes – Advocating for and developing sustainable building codes that mandate minimum sustainable design and construction requirements. This can help ensure that sustainable practices are adopted throughout the construction industry and promote the adoption of circular economy principles.

4. Policy Briefs for Society

• Support energy-efficient buildings – Advocating for the use of green building materials, renewable energy sources, and energy-efficient technologies such as LED lighting and smart thermostats.

• Support green spaces – Supporting the creation and maintenance of green spaces such as parks and green roofs. Green spaces can help reduce the environmental impact of buildings and improve the health and well-being of the surrounding community.

• Support reuse and recycling – Advocating for the adoption of circular business models in the construction industry and supporting programs that facilitate the reuse and recycling of building materials.

• Advocate for sustainable building policies – Advocating for the adoption of sustainable building policies at the local and national levels. This can include advocating for sustainable building codes, incentives for green building practices, and mandatory environmental impact assessments for new construction projects.

• Demand for sustainable building education – Such as programs for architects, engineers, contractors, and construction workers that focus on sustainable building practices and circular economy principles.

• Foster community engagement – Fostering community engagement in the planning and development of new construction projects. This can include community input on building design, construction materials, and sustainable practices to ensure that new construction projects meet the needs of the local community and promote sustainability.

• Emphasize sustainable building as a public health issue – Emphasizing the importance of sustainable building as a public health issue. This can include raising awareness of the health benefits of sustainable building practices such as improved air quality, reduced exposure to toxins, and improved mental health and well-being.

- Support sustainable building practices – Choosing to live and work in buildings that have been designed and constructed to be energy-efficient and environmentally friendly. This can include seeking out buildings with green certifications or supporting the use of renewable energy sources.

- Reduce waste – This can be achieved by recycling and repurposing construction materials, reducing waste during construction, and choosing products and materials that are designed for reuse.

- Support sustainable building material suppliers – Choosing to buy from sustainable building material suppliers. This can include suppliers who use recycled or reclaimed materials or those who have a strong focus on sustainability in their production process.

- Foster a culture of reuse – Including encouraging the reuse of existing buildings and structures, repurposing construction waste, and supporting initiatives that promote the use of reclaimed and recycled materials.

- Participate in waste reduction initiatives – Supporting programs that promote recycling and composting, advocating for better waste management practices on construction sites, and reducing personal waste through conscious consumption and disposal habits.

- Support circular economy education – This can include initiatives that teach individuals how to reduce waste, reuse materials, and recycle construction waste.

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