



Recycling Road Infrastructure

Technology, Regulations and Contract
Perceptions, Practice and Perspectives

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International Federation of Consulting Engineers
The Global Voice of Consulting Engineers

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Sustainability in the Building Sector

- Industry
 - Design for energy efficiency; incorporation of technologies
 - Construction practices (e.g. recycling and waste reduction, site management)
 - Operations (energy efficient practices, behaviours)
- Associations
 - Market transformation
 - Rating tools, benchmarking
 - Local engagement
- Government
 - Regulatory framework
 - Building in national strategies



Recycling the Road Infrastructure Supply Chain

The Players

- Owners/Developers
- Contractors
- Consulting Engineers
- Product Providers
- Material Extractors
- Regulators
- Financial Institutions
- Schools/Universities

The Barriers

- Public perception
- Procurement requirements
- Market Fragmentation (trade separation)
- Responsibility between the players is not clearly defined
- Risk distribution
- Costs, Margins, Time
- Policy and Regulation



FIDIC: International Federation of Consulting Engineers

Vision: Enabling the development of a sustainable world, as the recognised global voice for the consulting engineering industry

Mission:
Work closely with stakeholders to improve the business climate in which members operate and enable them to contribute to making the world a better place to live in, now and in the future

Founded in 1913

Headquarters in Geneva



FIDIC's Commitment to the Paris Agreement

- The development of the actions and tools needed to implement sustainability requirements in different sectors at scales ranging from buildings and infrastructure through to industries, transport systems and cities;
- The systematic integration in training programmes of specific sustainability considerations, with a focus on climate change mitigation and adaptation;
- The duty to advise clients with regard to corporate responsibility and sustainability.



FIDIC on sustainable development

- Ensure sustainability requirements are understood and prominent:
 - establish objectives, targets and indicators
 - develop innovative solutions
 - incorporate relevant provisions in contracts
 - manage projects from a life-cycle performance perspective

Getting the upfront procurement planning right



Themes and perspectives of engineering sustainability

Themes	Issues to be considered upfront (Internal and External to the project)
Water	Usage, availability, affordability
Energy	Usage, availability, affordability
Environment	Physical, chemical, biological, ecosystem
Health and Safety	Worker, community
Human Rights	Food, shelter, law, cultural artifacts, development
Materials	Usage, <u>recycling</u> , durability, renewability, <u>waste</u>

Source: Key Concepts for Project Sustainability Management (FIDIC, 2013)



Incorporate relevant provisions in contract

- Special Provisions in the Bid Documents and Contract
 - Waste recovery, recycling practices and use of recycled materials can be addressed in the particular contract conditions



Design for recycling and recovery

Sustainable design criteria

- Define initiatives and designs for sustainability. For example:
 - Designing to optimize disassembling of building products
 - 30% recycled material to be used
 - Renovation and maintenance projects will reuse materials as much as reasonably possible

A circular economy will retain more high value materials in the economy



What should happen to building materials in Existing Structures?

- Road infrastructure involves investments with long lifetime
- Changing knowledge/perceptions of building product specifications
- What should happen to building materials containing hazardous substances that are already circulating?



EU regulatory framework on waste and on building products

- Recycling is one of the central objectives of the European Commission's circular economy package
- By 2020 a minimum of 70% (by weight) of non-hazardous construction and demolition waste shall be prepared for re-use, recycled or undergo other material recovery
- The interface between chemical, product and waste legislation
 - Still in its infancy



Effective legislative/regulatory framework

- Regulations are often segmented and lack the ability to mix with other types of regulations
- Regulations may be very difficult to apply correctly in practice
- Regulations concerning waste may prohibit reuse/recycling because of very stringent “disposal” rules
- Product regulations may not take into account past use of hazardous substances
- Despite the EU regulatory framework on waste criteria and building products, no uniform implementation in the EU member-states



The future

- Low availability and high cost of raw materials will make recycling/reuse attractive
- Providing coherent long term policies and targets to incentivize the right investments
- Improving legal framework, preferably on a supranational level
- Public procurement criteria need to include criteria on recycling/reuse
 - Identify and align with existing tools, initiatives
- Uniform product standards and new technologies will lead to producing recycled materials with guaranteed quality





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