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Dynamic material flow analysis to support sustainable built environment development

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Propositions

1. Demolition activities in residential housing in Chinese cities will continue to grow throughout the rest of the 21st century.
2. China's demand for new residential construction will soon start to show a steep downward trend, if it has not already started. This decline will probably last for several decades. Similar may be expected for other new construction in cities.
3. The next half century may witness a serious overcapacity in the Chinese steel industry, which might exert considerable pressure on the global steel and iron ore markets.
4. One consequence of urbanization is an increased steel intensity of the life style. China's demand for steel for residential construction is determined by the urban housing system, while the rural housing system plays a negligible role in this respect.
5. China's high level of construction effort has so far been driven by the expansion of its built environment stock over the last three decades. For housing, this level will be largely determined by the replacement demand for the obsolete part of the existing stock for the next few decades.
6. Opportunities for the construction industry in the 21st century reside increasingly in providing services of maintenance, refurbishment, selective demolition and CDW (construction and demolition waste) recycling.
7. Increasing the recycling rate of CDW is going to be essential for more and more Chinese cities. Fundamental for a solution is to develop an information system to document the construction materials deposited in the built environment. This would offer a basis for planning the reuse, recycling and disposal of construction and demolition waste, and can be used as a map for future 'urban mining'.

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