Need for re-look at Green Building Rating Systems

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Buildings, accounting for 30-40 per cent of global energy use, are known to be energy guzzlers. In India, buildings account for 30% of total energy consumption. With growing concerns about the increasing energy water and material use in the building sector, green building movement started in early 90s in US and Europe. However in India, it gained momentum in India a few years back only.

A green building is an outcome of a design which focuses on increasing the efficiency of resource use – energy, water and materials – while reducing building impacts on human health and the environment through better sitting, design, construction, operation, maintenance and removal. In India, a few rating systems exist currently which assesses the building design and operation on different categories like energy consumption, water consumption, material use, air quality etc. Depending on the measures taken, points are awarded under each category. Points obtained under each category are further added to arrive at the total points, which decide the final green building rating.

However there are some issues in the current rating systems as they do not account for entire life cycle of the building and different green measures taken to obtain the rating. For example, by installing photovoltaic system on the building, points can be earned under the energy category. Intention of this measure is to increase the on-site renewable energy supply to reduce the use of fossil fuel for electricity generation. Since the photovoltaic cells converts sunlight into electricity directly, it does not require fossil fuels to generate electricity. However this approach does not account for the energy consumption during manufacturing and disposal of photovoltaic cells, which, as per several studies, can be 20-40% of the electricity generated in its entire lifetime. Situation becomes even worse if batteries are integrated with the PV system as because of losses in batteries, net electricity generation from the system decreases further. Similarly emission during manufacturing and disposal of photovoltaic cells and batteries would reduce the positive environment impact of the system during its operation.

Another example is the use of recycled materials in the building. It is possible to reduce the impacts resulting from extraction and processing of new virgin materials by using recycled materials. However this approach does not include emissions generated due to their transportation. It might be possible that recycled materials might have higher environmental impacts than the virgin material on life cycle basis in some cases.

It suggests the need for re-looking at the current rating systems and incorporating life cycle approach in analyzing the green rating of the building. Such approach would strengthen the existing rating system and would finally result in sustainable buildings on life cycle basis as well.