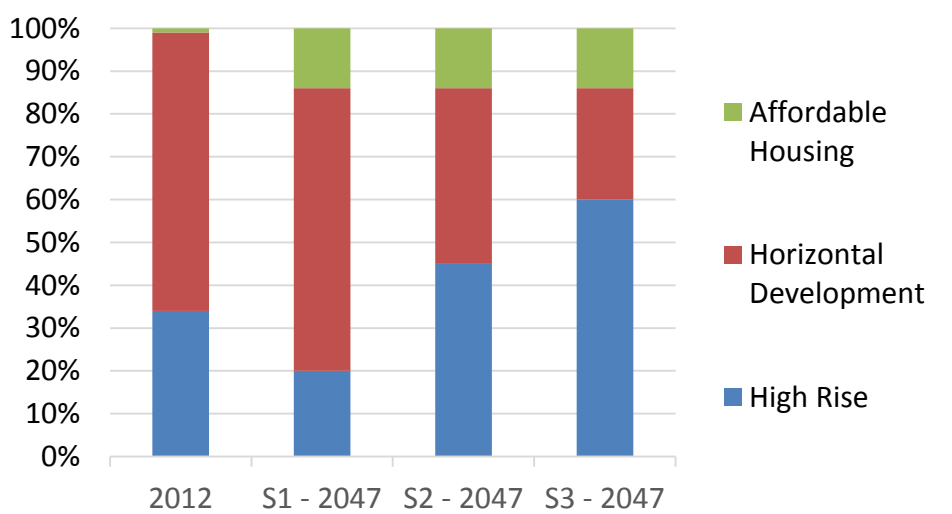


BUILDING ENVELOPE OPTIMIZATION

Construction is the second largest economic activity in India and has contributed around 8% to the nation's GDP (at constant prices) from 2006-07 to 2010-11. The real estate sector contributes to around 24% to the construction GDP of India and has been growing at a CAGR of 12%.

It has been estimated that 70% of the building stock in the year 2030 would be built during 2010-30. Residential and commercial sectors currently account for 29% of the total electricity consumption, which is expected to increase substantially in the near future, if present trends continue.

As a first step, three scenarios on how the urban planning scenario is expected to pan out in the future are offered to the user. Depending on the users' choice, the next leg of this analysis works on reducing the cooling load of buildings through greater penetration of building codes into construction of buildings (focussing on building material) which would reduce the need for cooling devices. The savings achieved depend on the Urban Planning Scenario chosen and the GDP level chosen. These savings in the cooling load then translate into a savings in the electricity demand of cooling devices, depending on their increasing ownership and efficiency.



LEVEL 1

Level 1 assumes that compliance to the ECBC codes remains voluntary, as is the case since its inception at the beginning of the 11th five year plan (FYP). Institutional, technological, informational and financial barriers also exist, which hinder the applicability of the same.

LEVEL 3

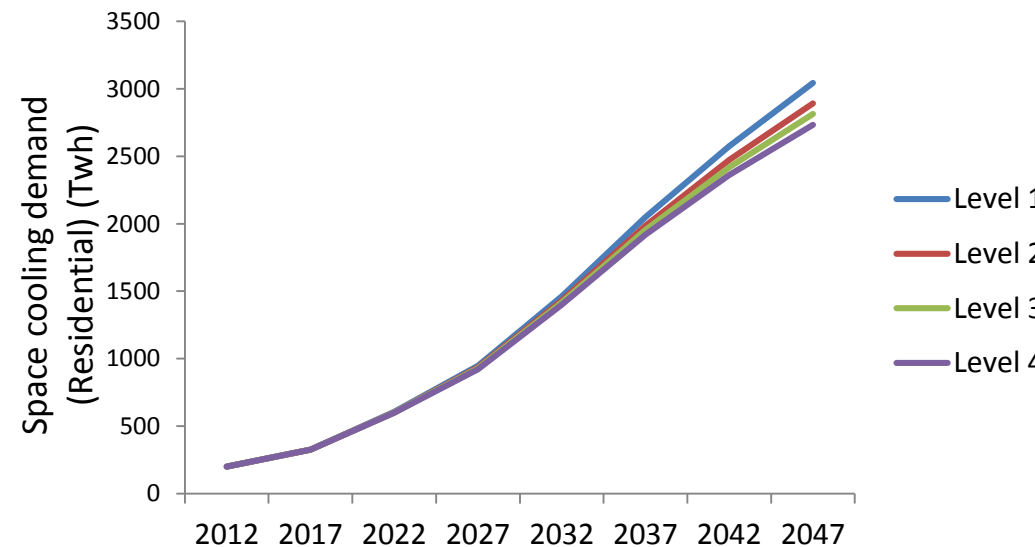
Level 3 assumes that along with standard building by laws, there is development of ECBC compliance structures at state level, and the modification of the EPI bandwidth based scheme to multi variable EPI scheme, both in the residential as well as the commercial sectors.

LEVEL 2

Level 2 assumes, as per the Energy Conservation Act 2001, the introduction of a bye law for ECBC compliance in new commercial buildings, and mandatory compliance in government buildings. It also assumes increasing adoption of incentive schemes, like a reduced property tax etc., for the ECBC code in new residential buildings.

LEVEL 4

Level 4 assumes a continuation of the multi variable EPI scheme and increasing mandates in states for implementation of the ECBC code. It also assumes a large scale drive towards making compliance to the ECBC code, mandatory, in new construction, till 2047.



Category	2012	L1-2047	L2-2047	L3-2047	L4-2047
Residential					
High Rise	1%	10%	50%	75%	90%
Horizontal	0%	5%	40%	55%	80%
Affordable Housing	0%	0%	0%	0%	0%
Commercial	10%	25%	50%	75%	100%