The environmental performance of climatic responsive office buildings

Joana Carla Soares Gonçalves, PhD.
Associate Professor at FAUUSP, Faculty of Architecture and Urbanism University of São Paulo; jocarch29@gmail.com; jocarch@usp.br ; +5511995742211
IPCC projections of CO$_2$ mitigation potential in 2030.
Source: IPCC (2007)
The importance of climatic responsive design
The key role of operable windows and adaptive opportunities
Productivity and health benefits

Better environmentally responsive buildings provide benefits beyond energy and environmental advantages:

The effects of environmental conditions on productivity:

• **Indoor air quality**: 6-9 per cent productivity gain (Wyon 2004)

• **Natural ventilation**: 3-18 per cent productivity gain (NSF/IUCRC 2004)

• **Local thermal control**: 3.5-37 per cent productivity gain (Loftness et al. 2003)

• **Daylighting**: 3-40 per cent productivity and sales gain (Loftness et al. 2003)

• **Rent premium**: up to a 36 per cent increase (Baker et al. 2008)
CASE STUDY – Commerzbank, Frankfurt
Building as a Cultural Modifier
CASE STUDY – Itália Building, República, São Paulo
Orientação leste e oeste – 13º andar – ventilado naturalmente
PROPOSAL

design strategies: addressing external + internal climates

Quality Spaces + Internal environmental diversity + adaptive opportunities & Intuitive Environmental behaviour = less energy intensive buildings