Impact of building energetics on urban climate

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Rural vs urban energy balance
Impact of building energy demand on urban climate

Building energy demand leads to
- Increase of anthropogenic sensible and latent heat flux
- Amplification of (nocturnal) urban heat island (UHI)

Feedbacks between UHI and building energy demand
- Negative during heating season
- Positive during cooling season
Anthropogenic heat flux (ex: Toulouse – CAPITOUL)

Pigeon et al., 2007
Example: Impact of air conditioning on UHI
Result of De Munck et al. (2013)
Thank you

- Coupling urban climate models and building energetics models

- Mitigation, adaptation and urban engineering
Annex

Kikegawa et al
2003
Annex (TEB – BEM données CAPITOUL)