



## Challenges and Trends in the Buildings Sector

International Conference on Sustainable Cooling  
A Focus on the Policy and Regulatory Aspects of the Cooling Challenge  
World Bank, 28 November 2018

Martina Otto, Head of Secretariat  
Global Alliance for Buildings and Construction

# Who we are

26 countries/ministries, 4 public agencies, 10 local governments and related networks, 38 civil-society organization/think tanks and related networks, 11 intergovernmental organizations, and 21 private sector enterprises and related networks





# Towards zero-emission, efficient and resilient buildings and construction

Raising ambition levels

Highlighting the buildings and construction sector potential

4.9 GtCO<sub>2</sub> emissions abatement potential

- ✓ Encouraging conducive policy frameworks
- ✓ Promoting performance-based, mandatory building codes
- ✓ Enhancing financial incentives

Achieving Market Transformation

Amplify existing initiatives

Mobilize all actors along value chain





# What we do

Keeping the buildings and construction sector **under review**

**Global Status Report**

**Forging a pathway to low-carbon buildings and construction**

**NDC Guide: Incorporating Buildings Sector in Climate Actions**

**Global Roadmap**  
*(under construction)*

Facilitating regional **knowledge exchange**

**Regional Roundtables and Roadmaps**

Shaping the **global agenda**

**High-Level Events and Local Alliances**

**5**  
**Work Areas**

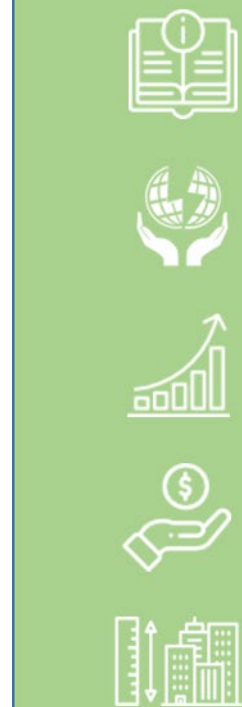
**Awareness & Education**

**Public Policies**

**Finance**

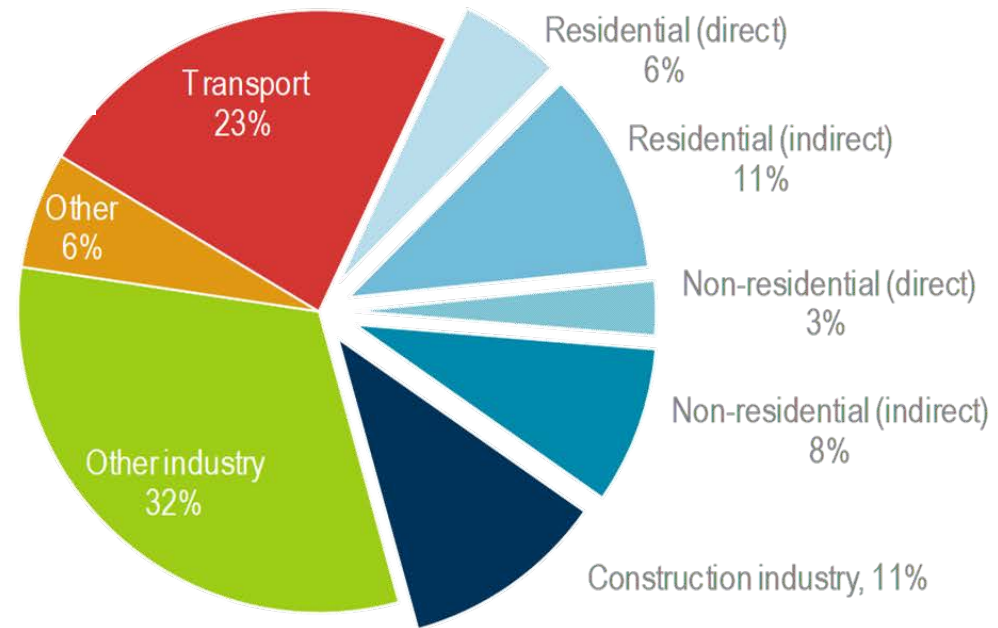
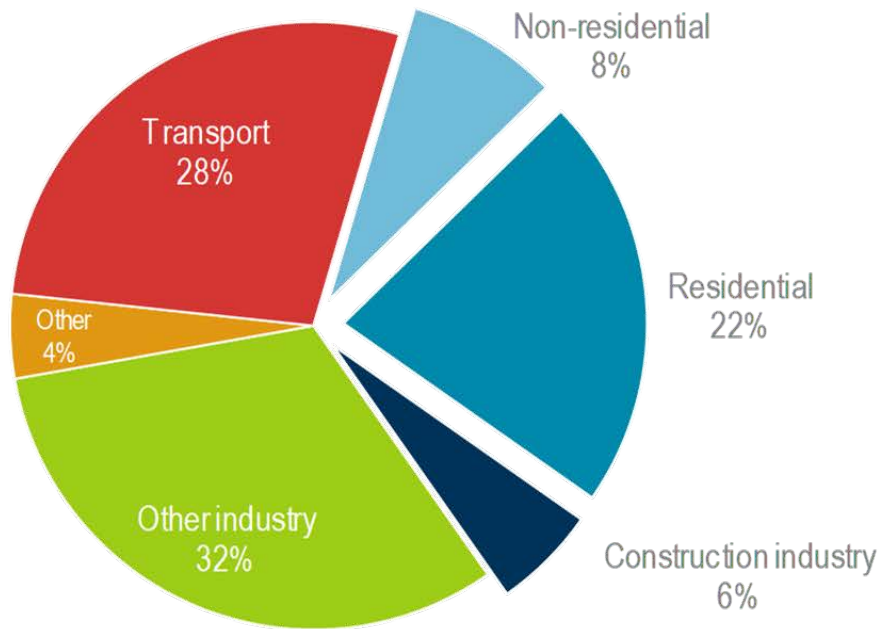
**Market Transformation**

**Building Measurement, Data and Information**



# Emissions and energy use of buildings & construction

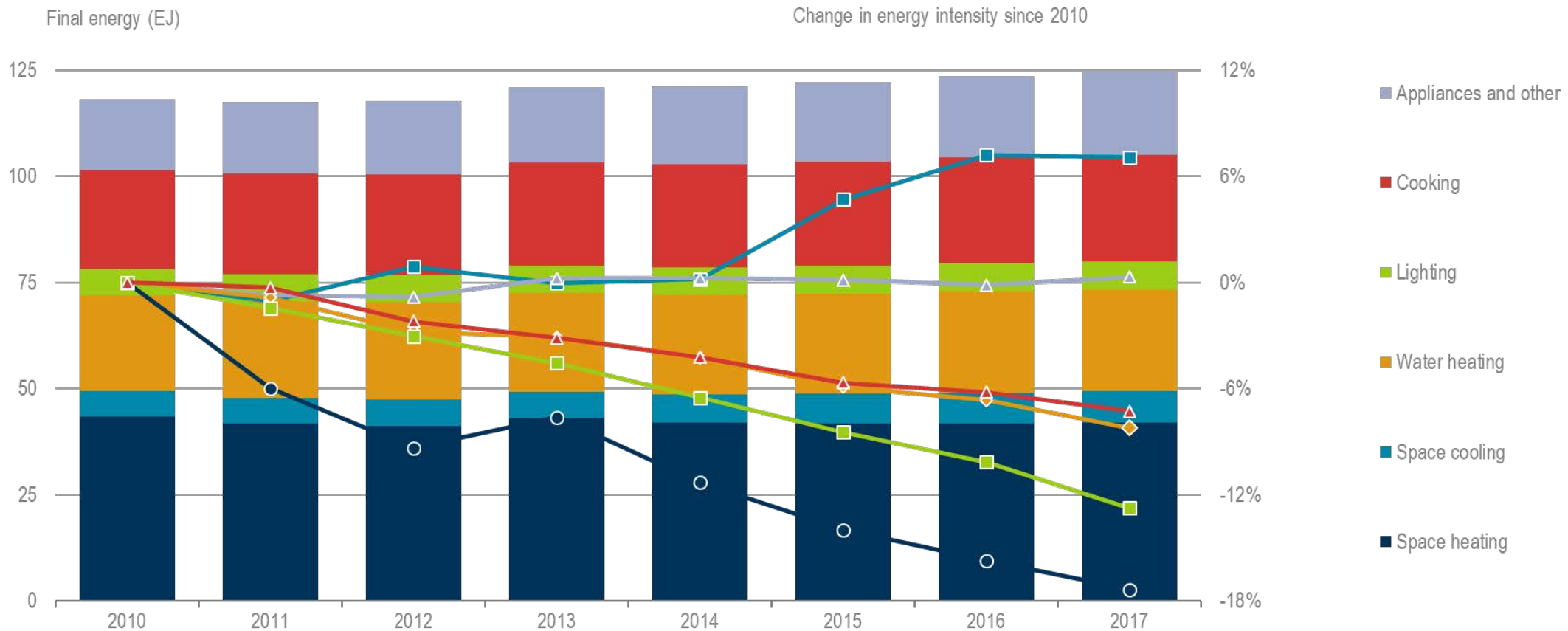
Share of global final energy consumption by sector, 2017    Share of global energy-related CO<sub>2</sub> emissions by sector, 2017



**Buildings and construction represent nearly 40% of energy and process related CO<sub>2</sub> emissions and 36% of final energy use.**



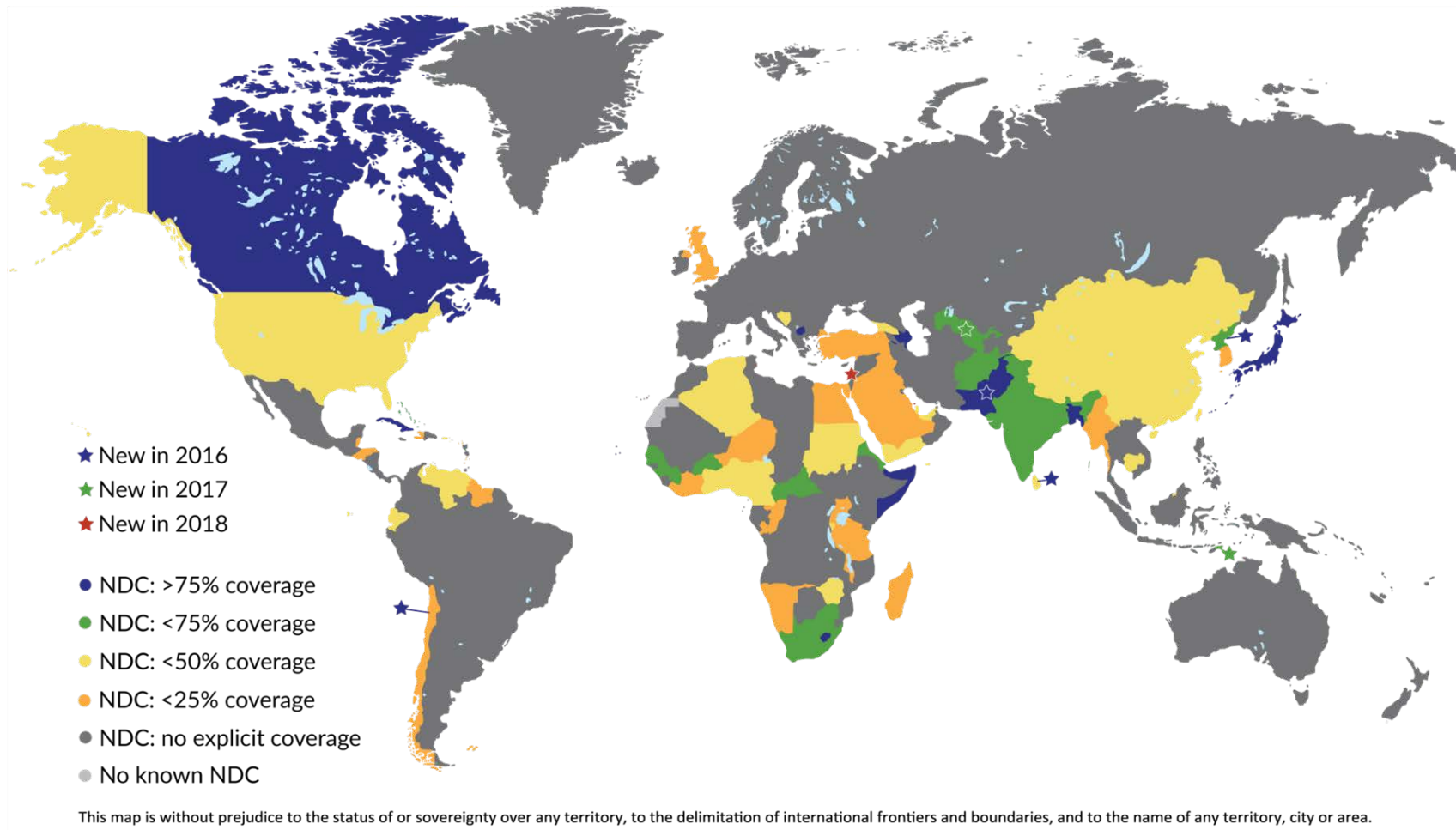
# Global buildings final energy use and change in intensity by end use, 2010-17



**Space cooling is amongst the fastest growing building end uses; only space cooling has grown in energy intensity per unit floor area.**



# Nationally Determined Contributions

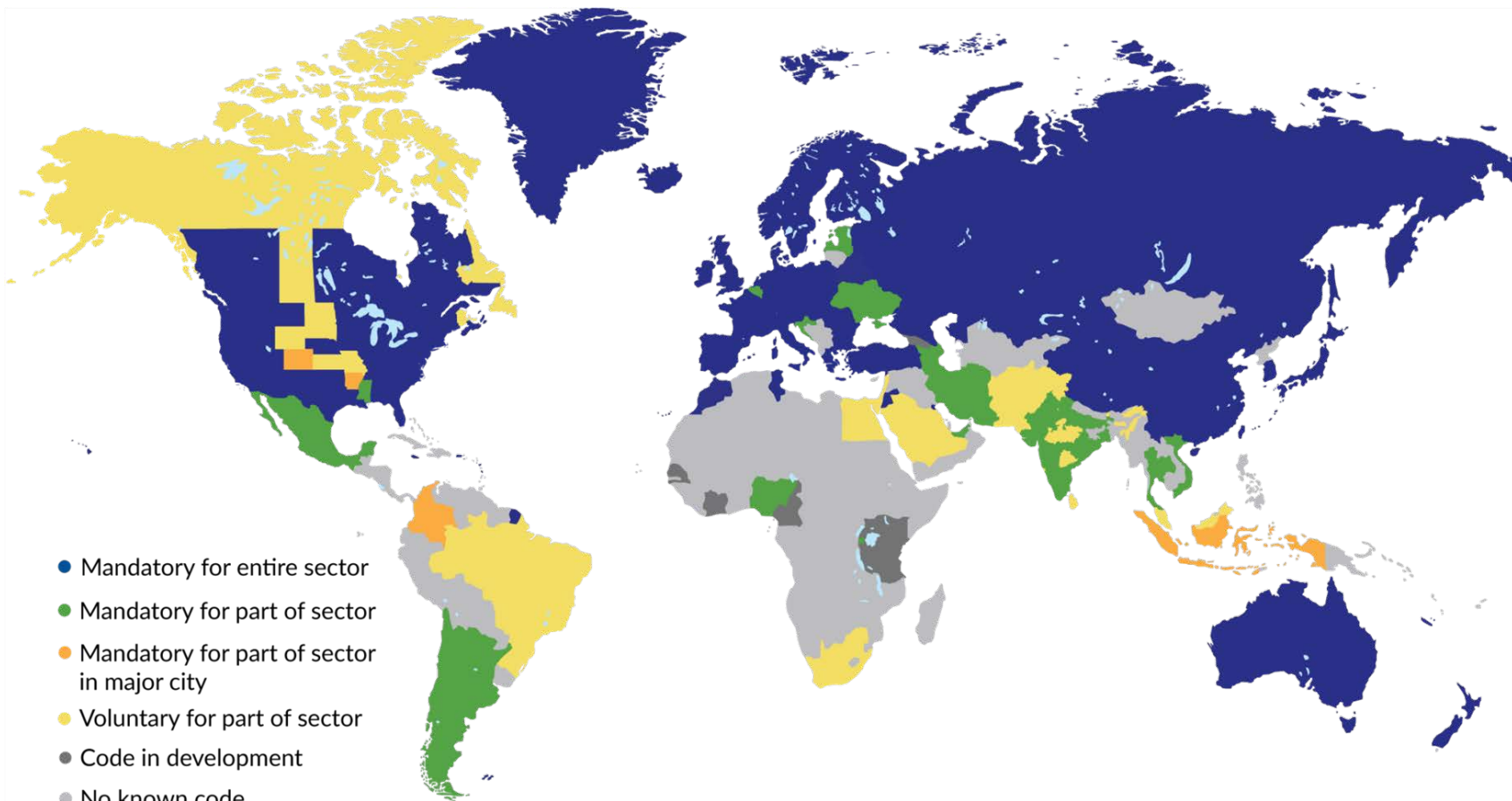


**Only 136 NDCs mention the buildings sector,  
often without mention of specific targets or measures.**





# Building Energy Codes

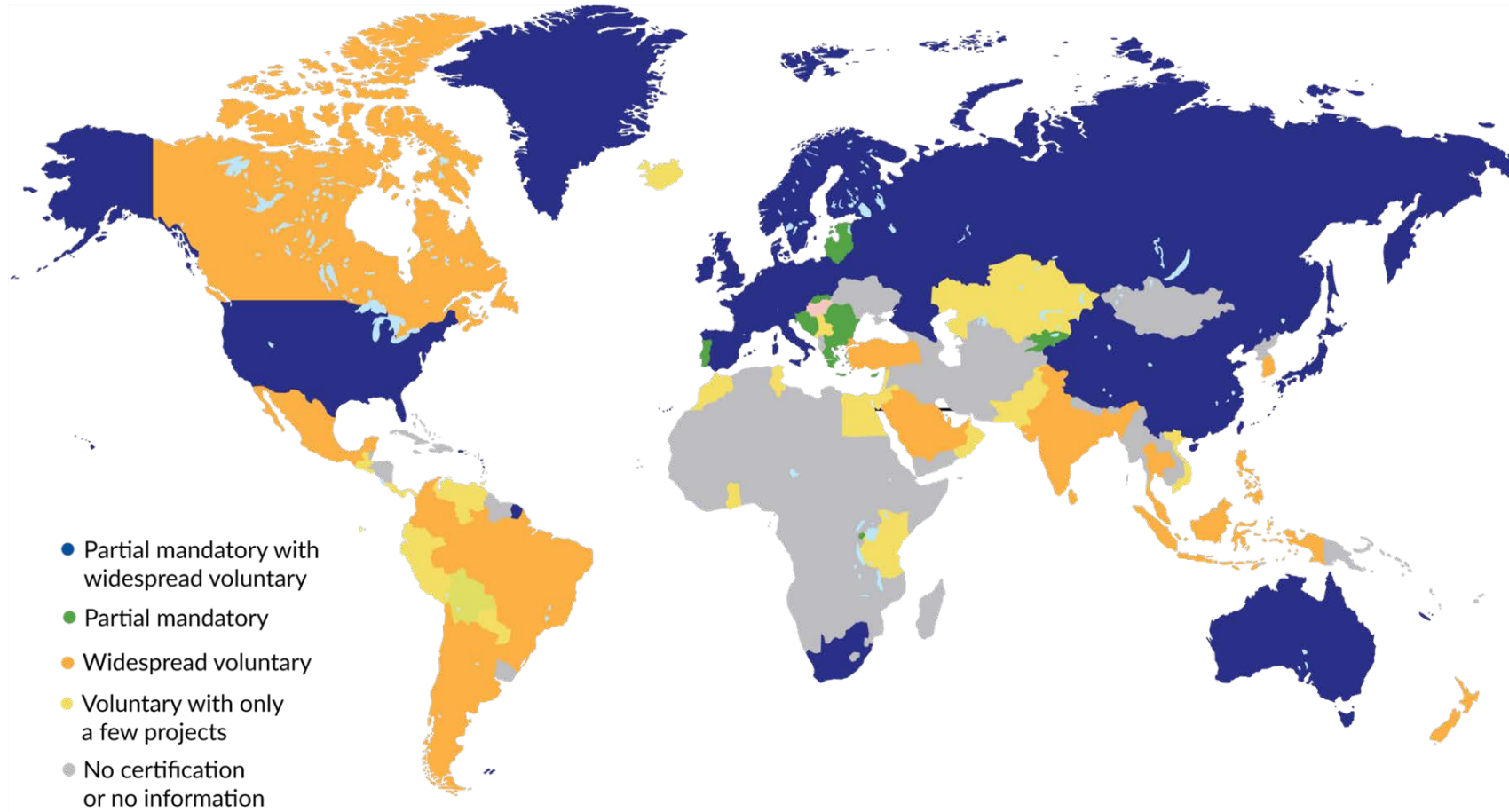


This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

**Nearly two-thirds of countries do not have mandatory building energy codes in place today.**



# Building Energy Certification

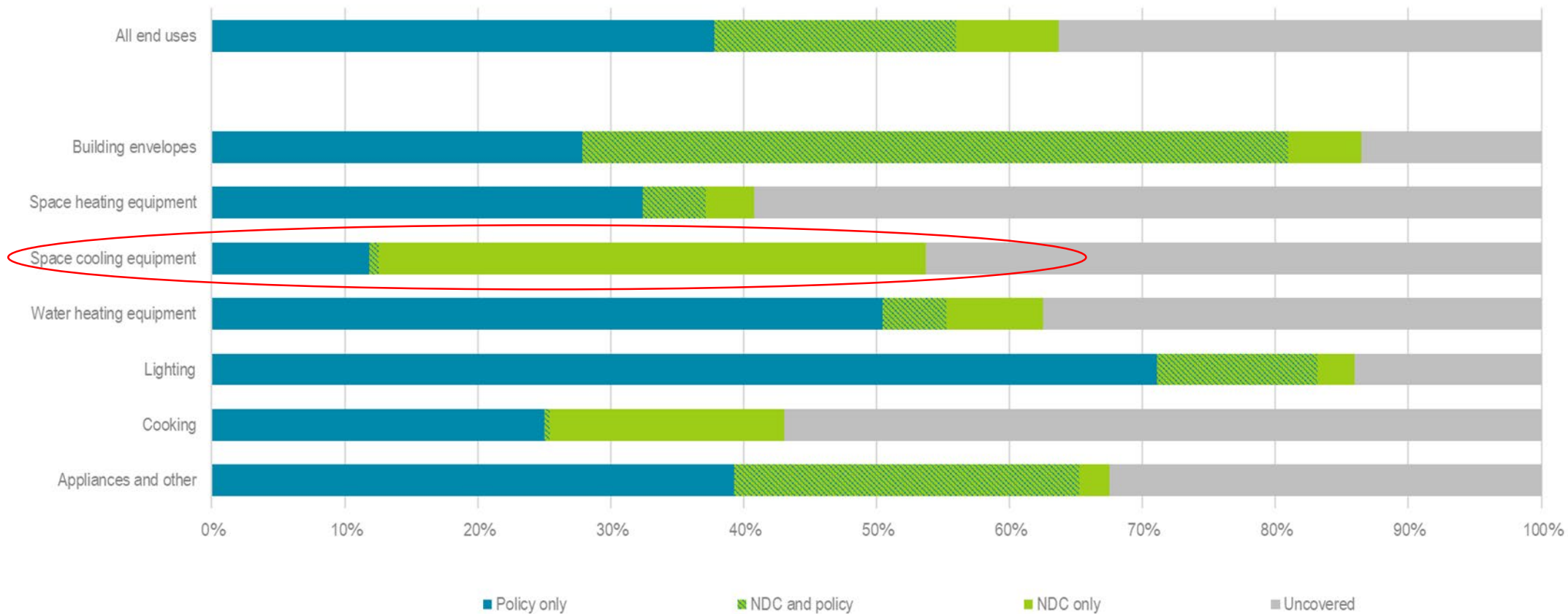


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**While increasing common in more countries, building energy certifications are typically voluntary.**



# Share of buildings emissions covered by NDCs, policies or both



Building sector emissions coverage varies greatly across end uses.





# Global Roadmap

## Strategic Priority Areas:

**Urban planning:** use urban planning policies to enable reduced energy demand, increased renewable energy capacity and improved infrastructure resilience.

**New buildings:** Increase uptake of net-zero operating emissions for buildings.

**Existing building retrofitting:** Increase the rate of building energy renovation and increase the level of energy efficiency in existing buildings.

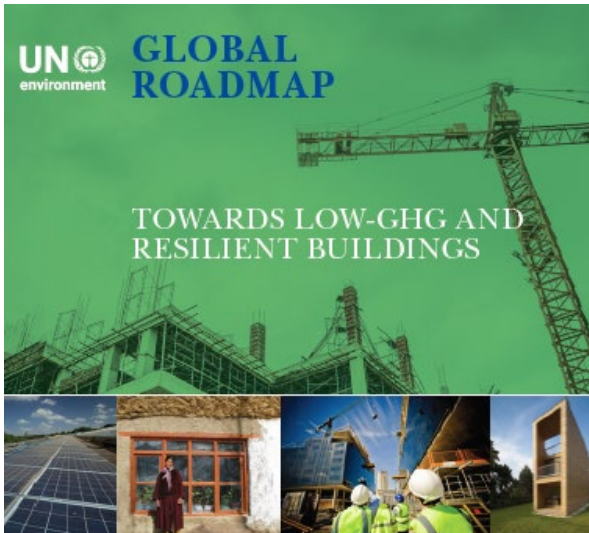
**Existing building operations:** Reduce the operating energy and emissions through improved energy management tools and operational capacity building.

**Systems:** Reduce the energy demand from systems, appliances, lighting and cooking.

**Materials:** Reduce the environmental impact of materials and equipment in the buildings and construction value chain by taking a life-cycle approach.

**Resiliency:** Reduce building risks related to climate change by adapting building design and improving resilience.

**Clean energy:** Increase secure, affordable and sustainable energy and reduce the carbon footprint of energy demand in buildings.



"This Roadmap aims to describe, when possible, the main overarching goals, steps and agenda that the building sector as a whole could share, creating the framework of a common vision for low-GHG and resilient global real estate pathways"



November 2020



# Avoid

- **Urban fabric:** designing bio-climatically the urban fabric and optimizing the layout of urban blocks; neighborhood scale is critical
- **Building design:** maximizing use of passive techniques (thermal buffers, cross ventilation, shading devices, greening, green roofs, etc.)

# Shift

- **Holistic approaches:** considering solutions that allow greater integration, 'beyond the single building' and towards circular economy, such as modern District Energy Systems
- **Behavioral shifts:** beyond the single building' and towards circular economy, such as modern District Energy Systems

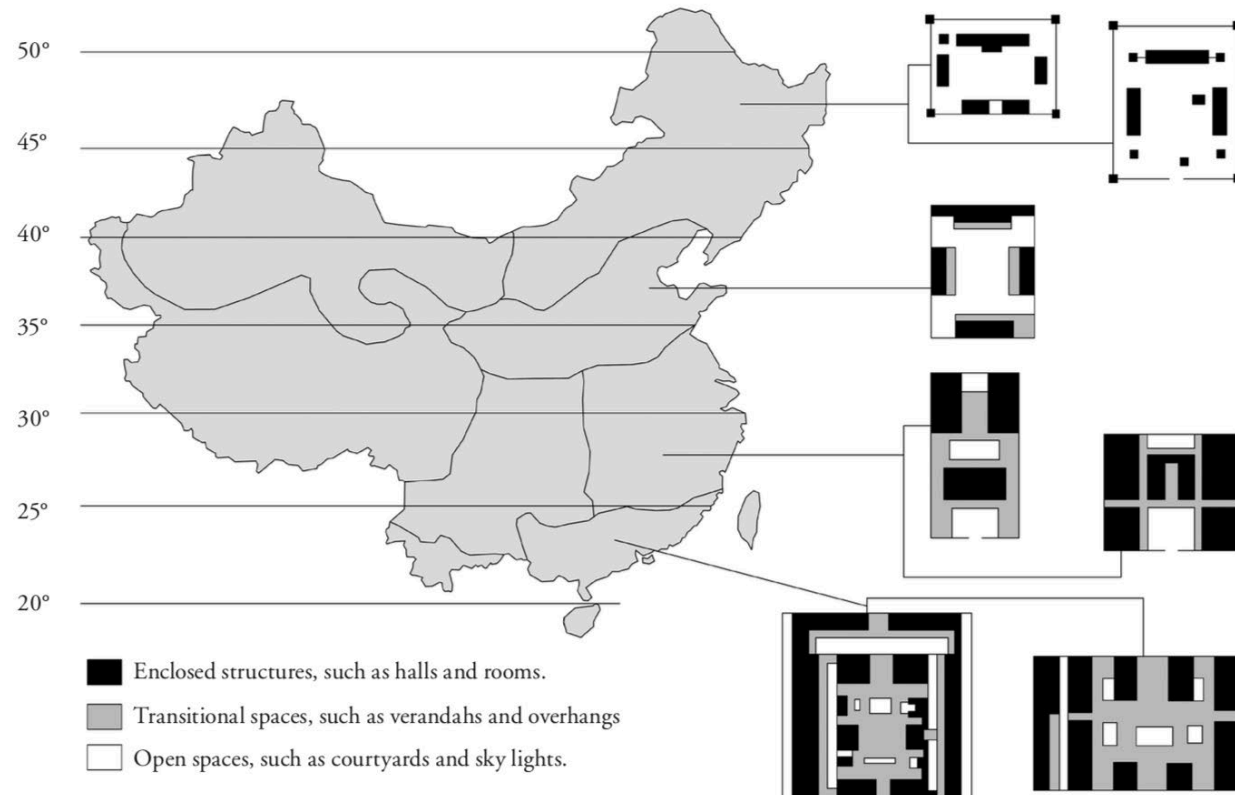
# Improve

- **Performance improvements of appliances:** MEPS



# Climate responsive vernacular urban forms

From Northeast to Southeast in four regions of China, open spaces decrease in proportion to enclosed built spaces so that large courtyards shrink drastically.

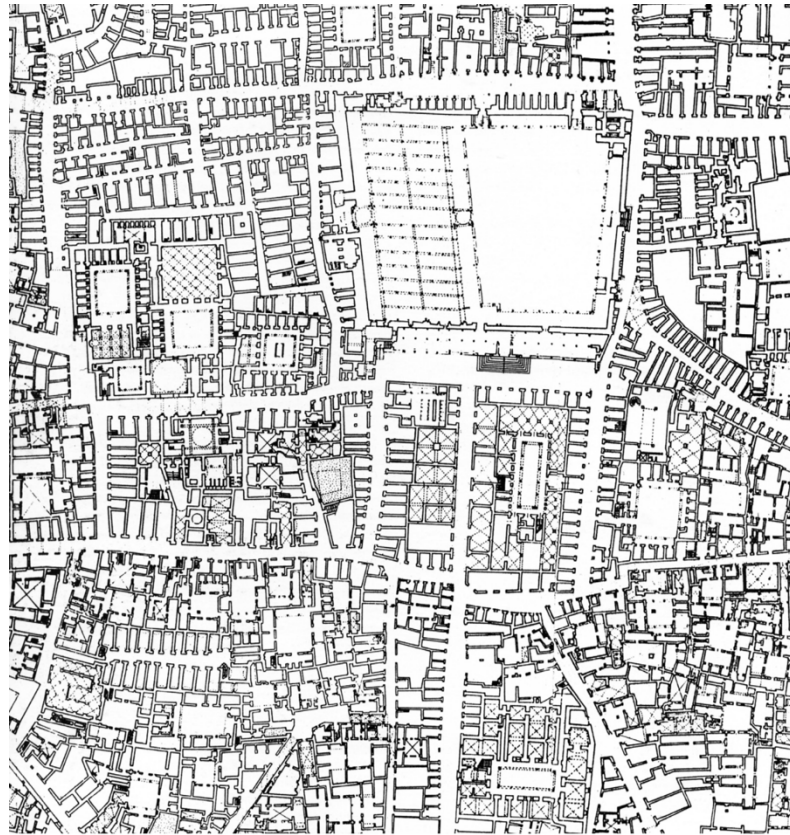


Source: Serge Salat, *Cities and Forms*, 2011.

# Climate responsive vernacular urban forms

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**Smaller courtyard forms are also the most energy efficient in hot and arid climates; e.g. in Central Tunis Medina**



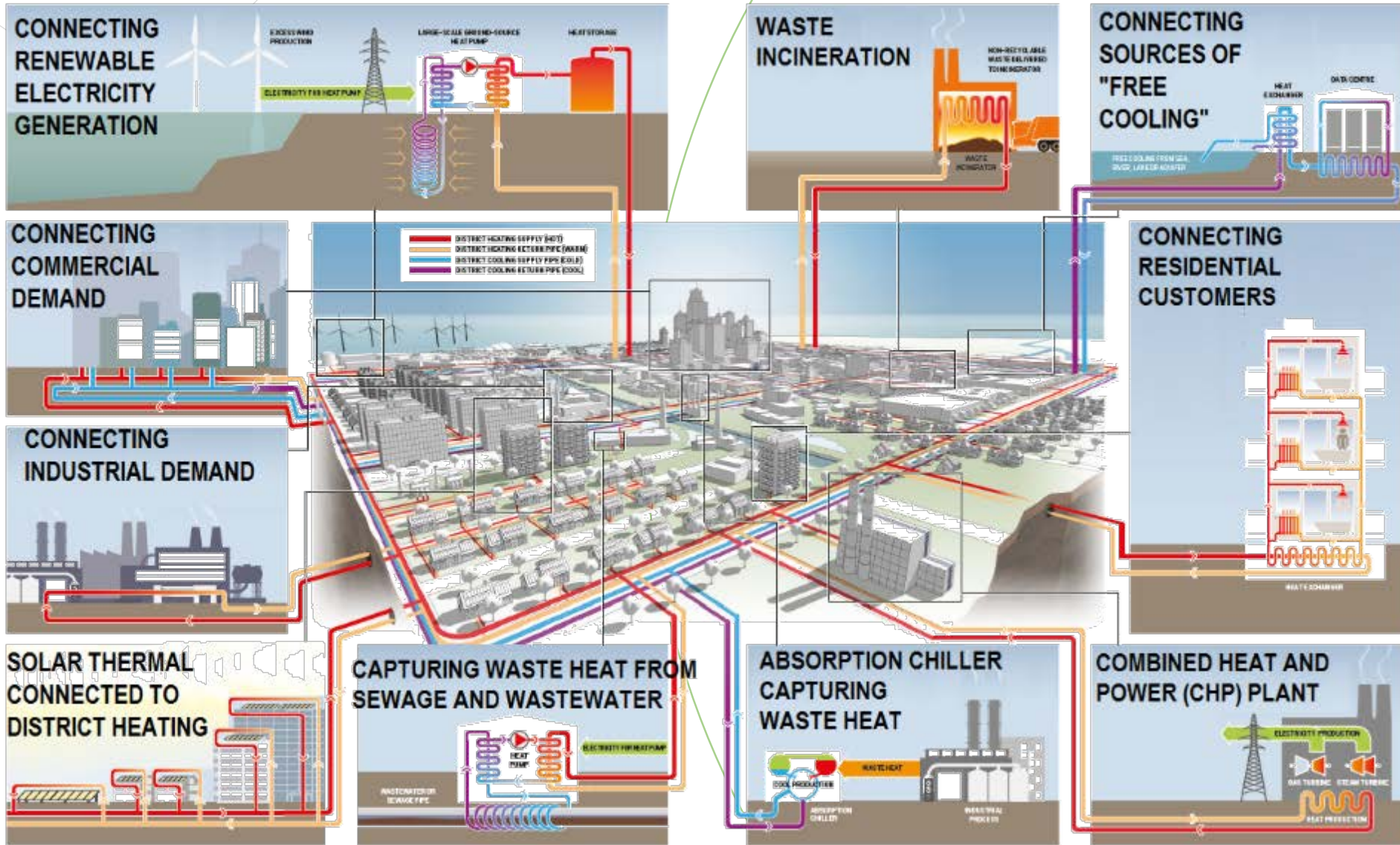


# MODERN DISTRICT ENERGY



DISTRICT ENERGY  
IN CITIES  
INITIATIVE

## EFFICIENCY & RENEWABLES





# Join the GlobalABC Shape the global transition!

Learn about or join at [GlobalABC.org](https://GlobalABC.org)  
Contact the Secretariat: [Global.ABC@un.org](mailto:Global.ABC@un.org)