

COPENHAGEN CLEANTECH CLUSTER
Global Cleantech Report 2012

A SNAPSHOT OF FUTURE GLOBAL MARKETS

- EXECUTIVE PRESENTATION -

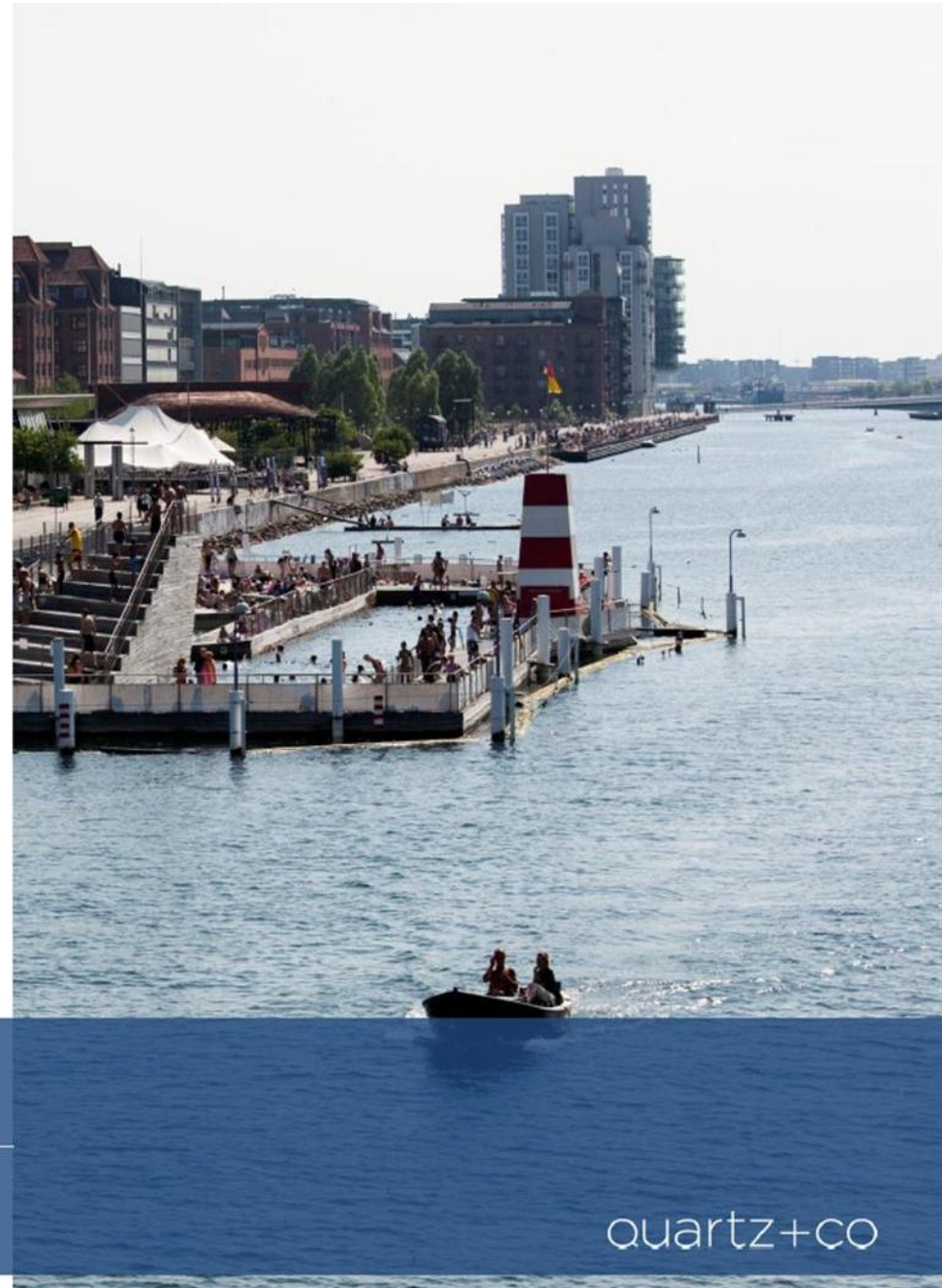
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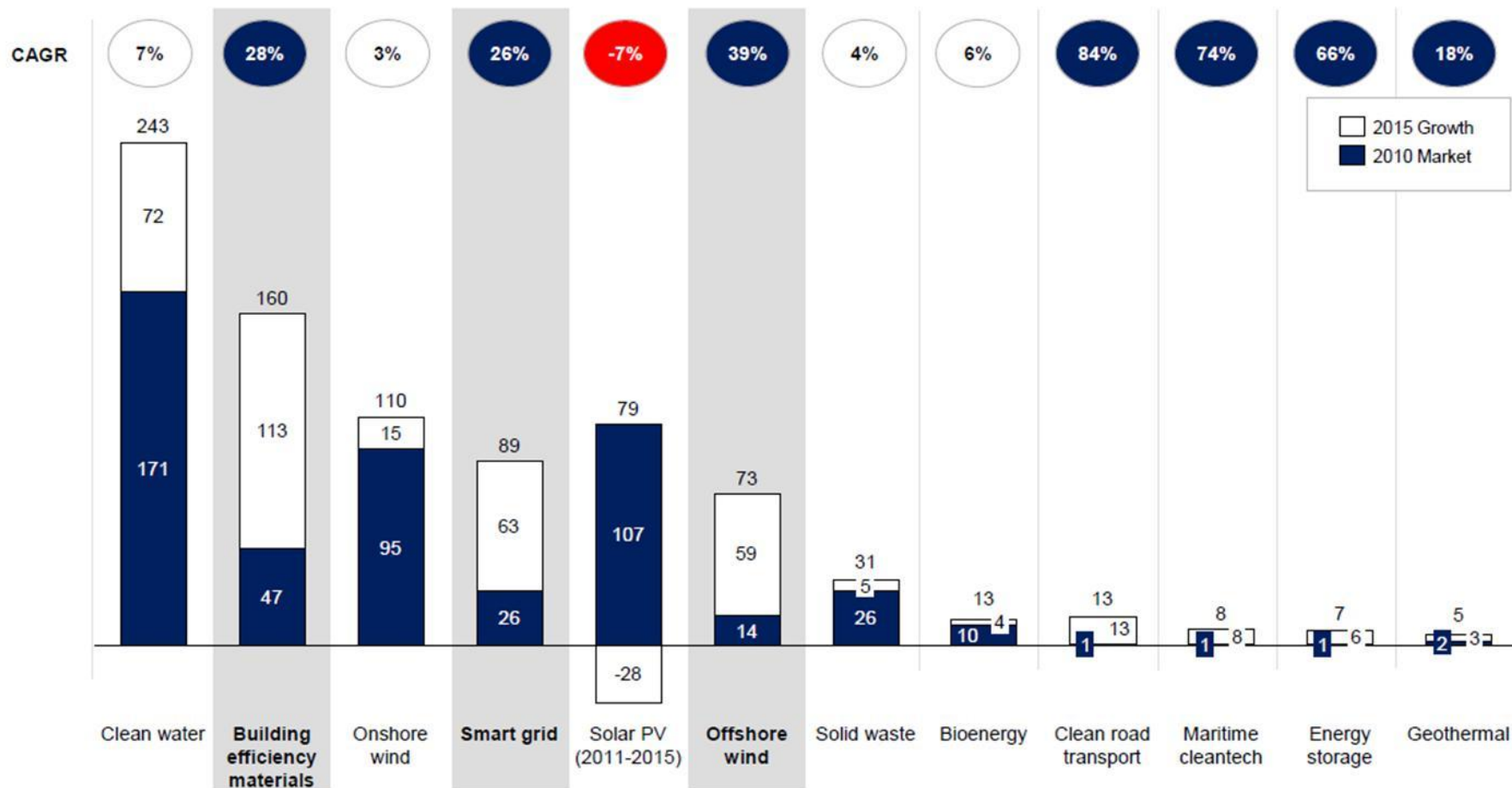
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The cleantech sector will continue to grow towards 2015 with green buildings, smart grid and offshore wind as the fastest-growing platforms

Cleantech platforms – market size (USD billions)



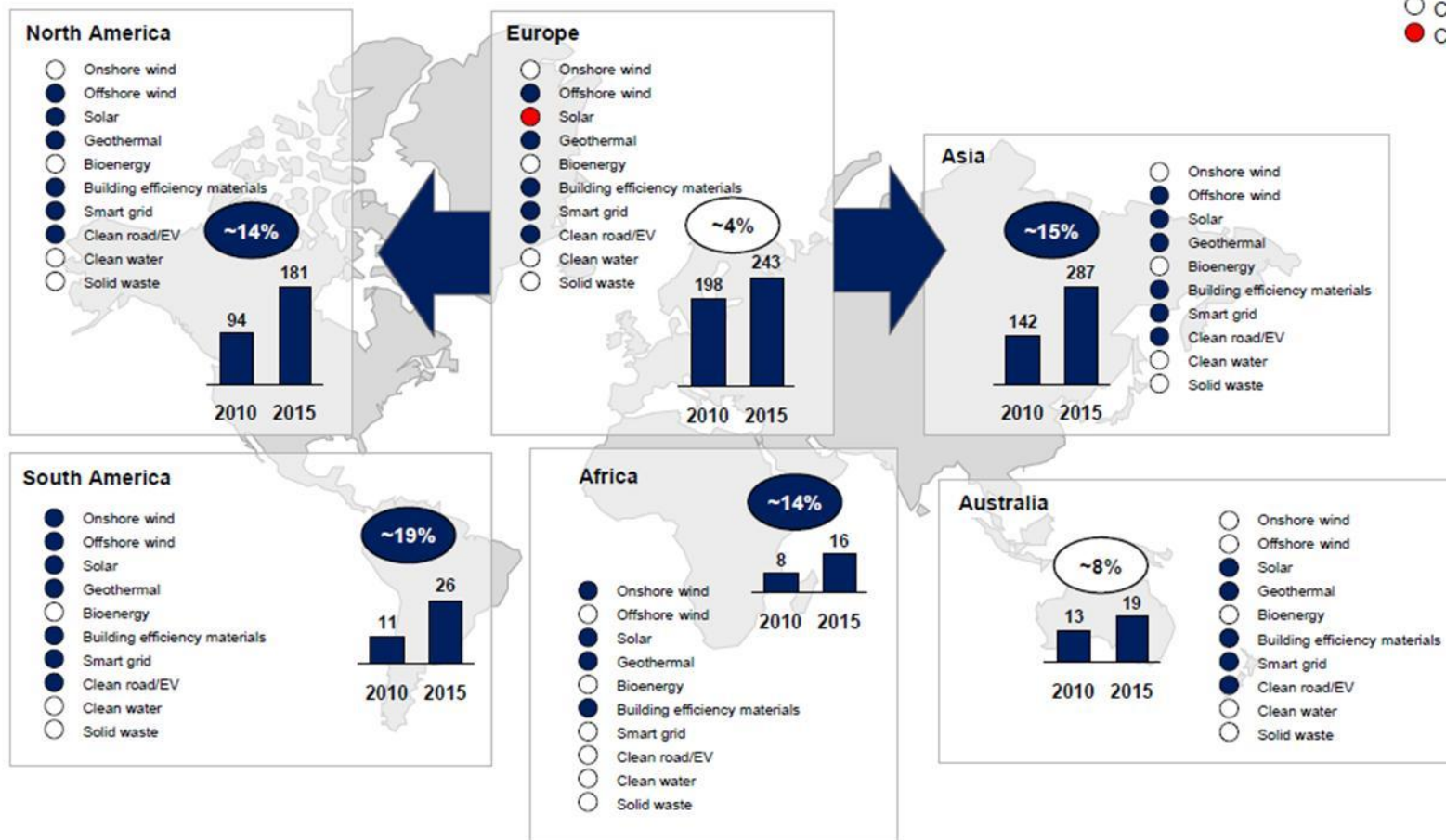
Note: Markets include all major CAPEX but not operations or commodities. Total may vary due to roundings

4 | Sources: MEC Intelligence; Quartz+Co analysis

The “centre of gravity” for cleantech growth is moving East and West

The global market for cleantech across regions, 2010- 2015E (USD billions)

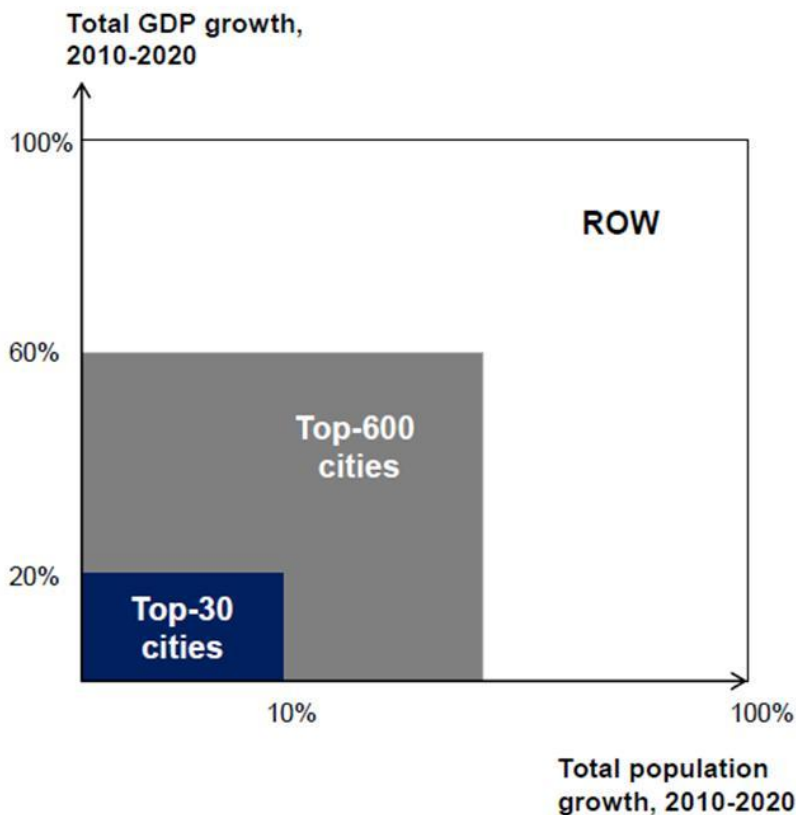
- CAGR >10%
- CAGR 0-10%
- CAGR < 0%



Note: “centre of gravity” is used as a metaphorical term in this context

The megacities are the main growth engines as ECO-city ambitions and principles seem to be "the new normal"

Top-30 cities will drive 20% of the GDP growth from 2010-20



Cities have the power to influence cleantech investments through large projects

Area	City power	Number of city projects
Transport	●	◐
Buildings	◐	◐
Waste	●	●
Water	◐	◐
Energy supply	◐	◐
Outdoor lighting	●	◐

ECO-city definition

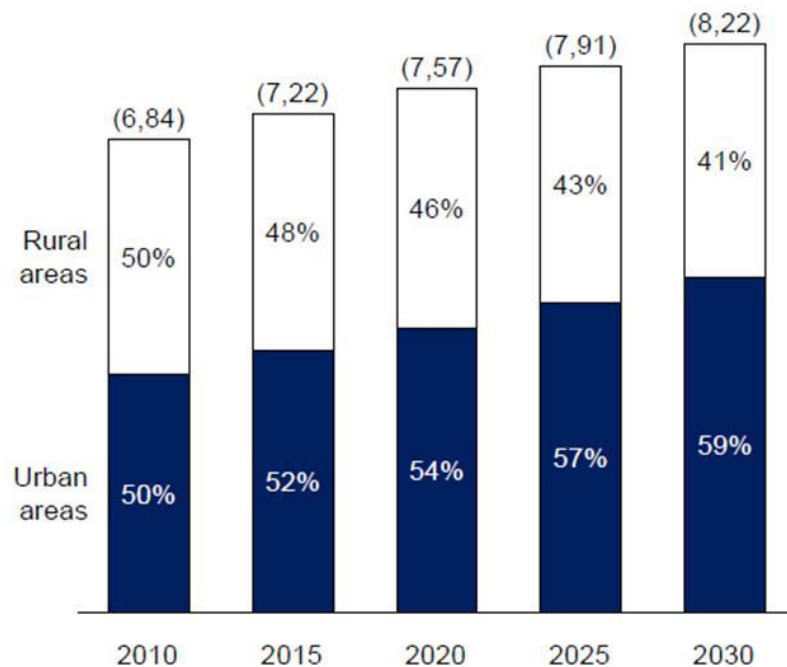
ECO-cities cover five focus areas which contribute to improve the quality of life in cities while using resources in a sustainable way and reducing environmental impact

- Urban transport
- Waste
- Renewable and smart energy generation and distribution
- Water
- Building energy efficiency

The world's urbanisation rate will continue to be rapid, and large investments will be made in developing megacities and suburb areas

Share of the world's population living in urban areas

Per cent (billion people)



Example of Chinese investments in megacity developments



China is planning to invest DKK 1.800 billion across 160 infrastructure projects over the next couple of years to merge nine cities in South China, creating a city with 42 million inhabitants*

Total investment in urban infrastructure in China over the next five years is expected to hit GBP 685 billion, with an additional GBP 300 billion spend on high-speed rail and GBP 70 billion on urban transport

British Chamber of Commerce

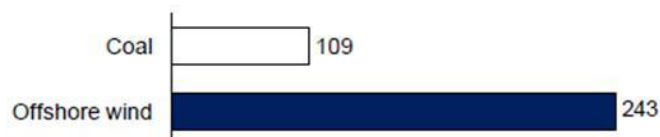
To unleash the full global potential, the cleantech sector must cross the cost of energy chasm and accelerate the industrialisation

In order to become a viable global industry, **cleantech must reduce cost of energy** to become independent of governmental support

So far, **no cleantech or clean energy industry has managed to cross the cost of energy chasm** without legislative support through incentives or codes

Coal vs. wind – global average costs* (USD/MWh)

EXAMPLES

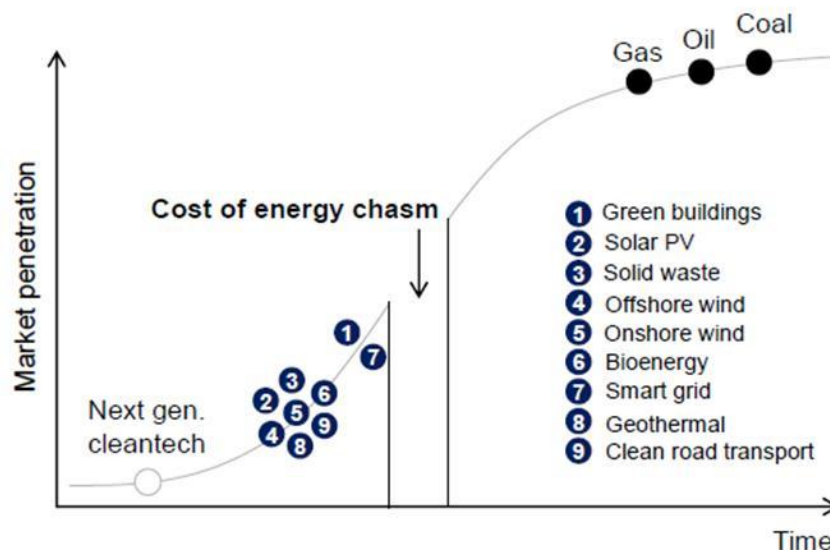


"Non-green" vs. green building – extra up-front cost for green building**



Sample technology maturity curve

ILLUSTRATIVE



In 2035, subsidies to renewables reach almost USD 250 billion in the New Policies Scenario. Onshore wind becomes competitive around 2020 in the European Union ... All other technologies require continuing subsidies

World Energy Outlook 2011

... smart grid and building energy efficiency equipment and services are the most probable ones crossing the cost of energy chasm since they are able to reduce alternative investments in infrastructure while reducing the operating cost

The Global Cleantech Report 2012

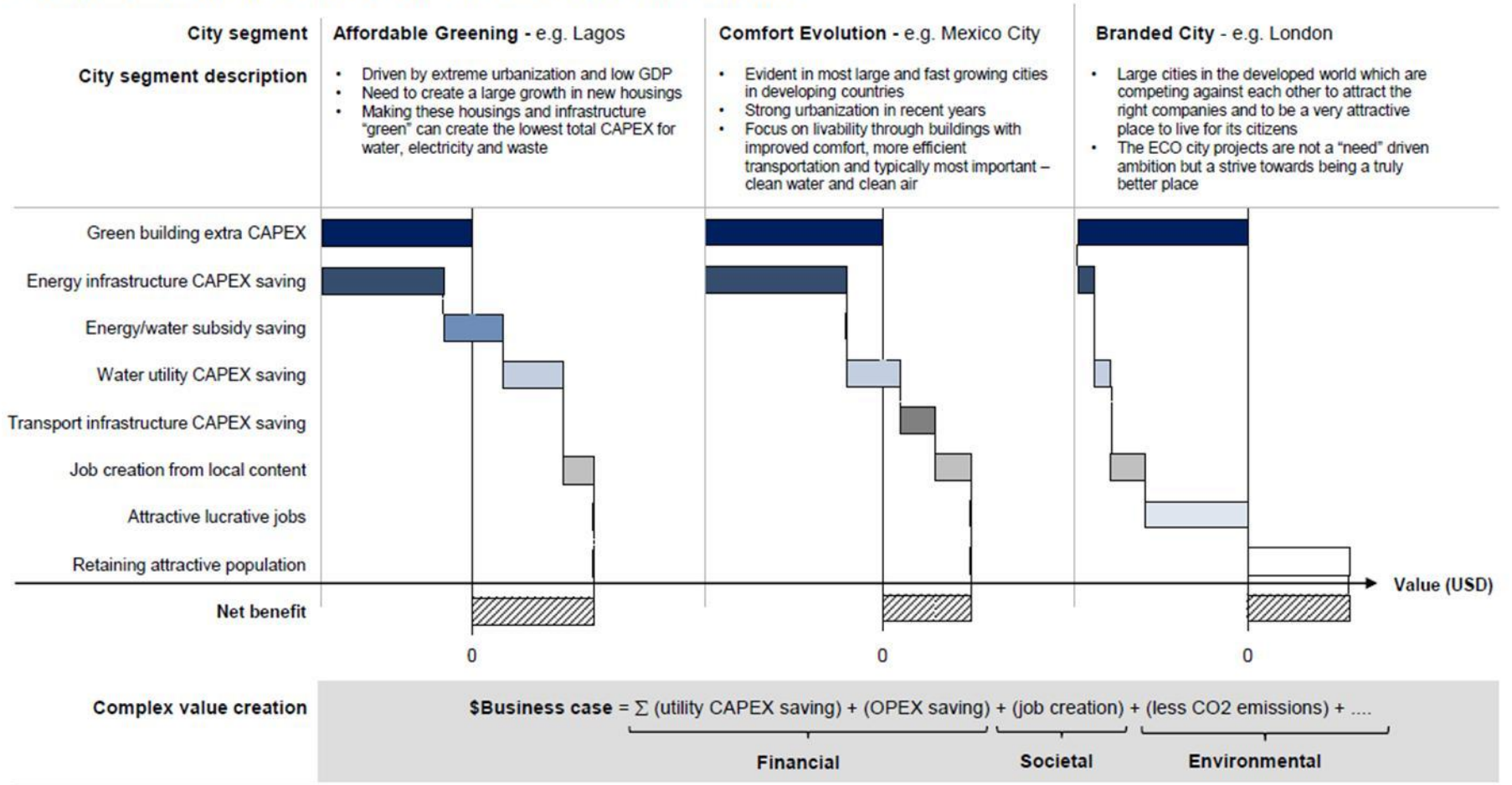
* Estimated for plants entering into service in 2016. Unit is 2012 USD

** The extra cost varies between countries due to difference in local build culture, certification programmes and green build material production

Complex value-creation models need to be investigated and developed in order to meet the demand for competitive integrated solutions with local content

ILLUSTRATIVE

Savings from integrated "One System" solutions across city segments



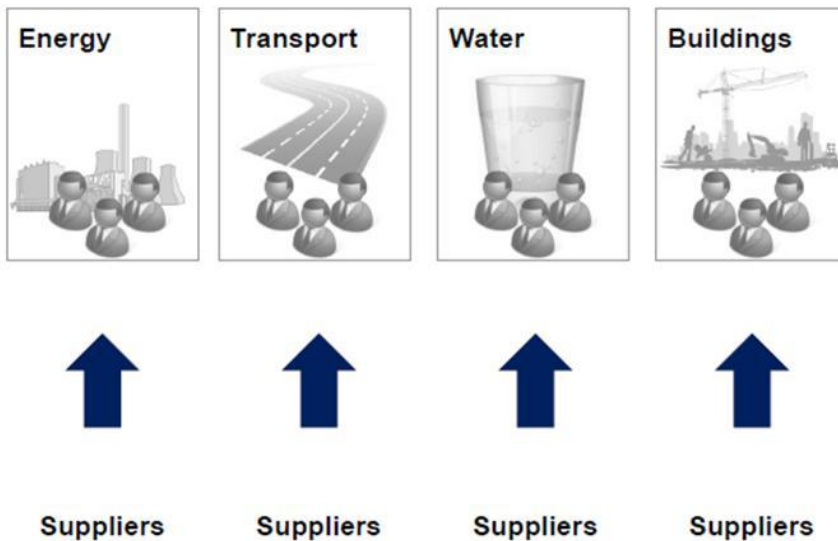
The traditional Go-to-Market approaches will not be suitable when addressing this new market as demand is moving towards complex value systems

From a micro-thinking approach with multiple customer touch-points across sectors ...

... to a macro approach where purchasing decisions are co-ordinated and made on an aggregated level across sectors

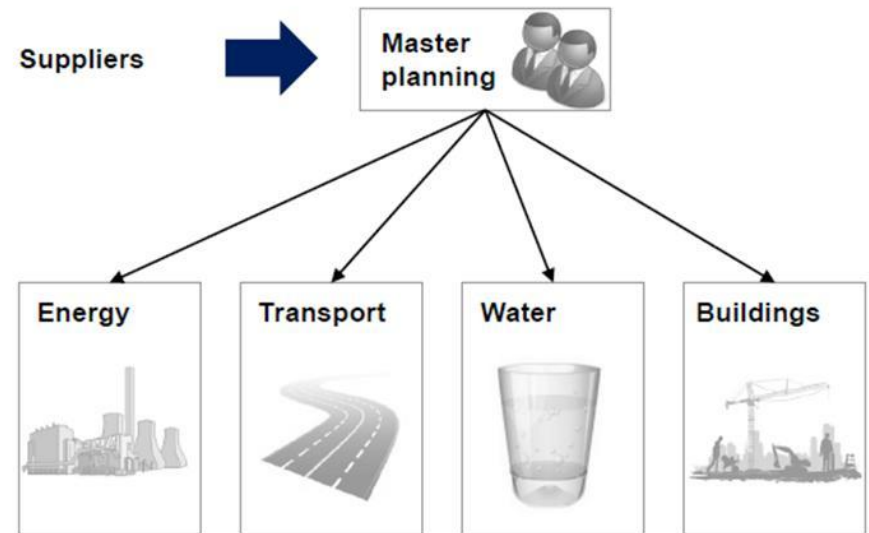
Traditional go-to-market approach

ILLUSTRATIVE



Market approach towards megacities

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Large Public-Private Partnerships (PPP) will be a cornerstone to overcome shortage in capital and competences in the "greening" of megacities

Lack of capital

Cities are empowered to implement new sustainable projects but limited by access to capital

Competition for resources is fierce. Because of **growth pressures and capital constraints**, compromises are often reached to serve more interests rather than to serve more people more effectively

The World Bank – Ecological Cities as Economic Cities 2010

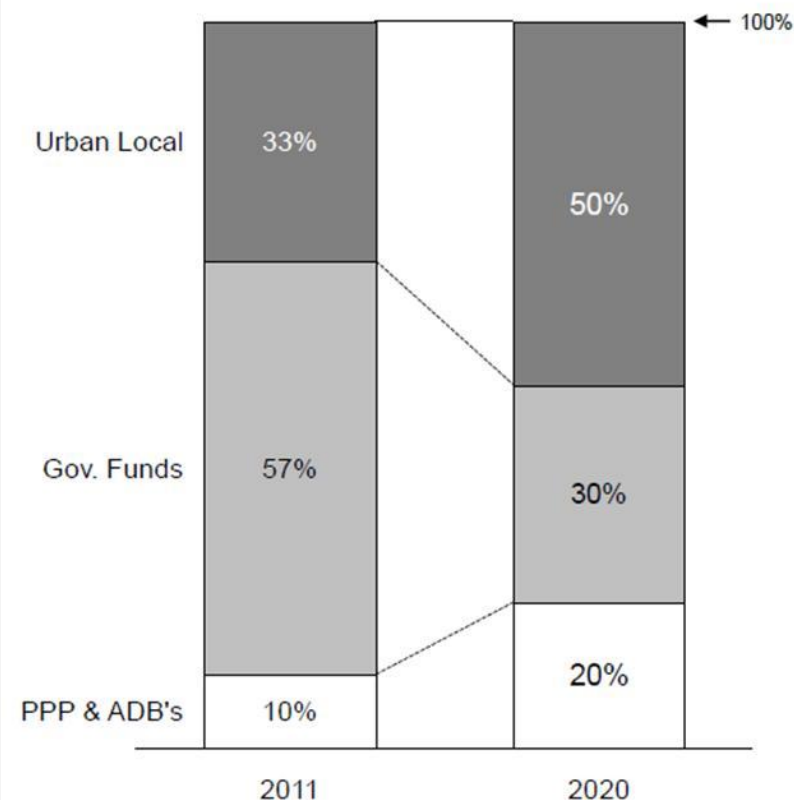
Lack of competences

Competences for sustainable planning and implementation are in shortage

Cities in developing countries face much tougher challenges than do their counterparts in developed countries. **Technical capacity is often lacking**

The World Bank – Ecological Cities as Economic Cities 2010




India case: Expected development in funding of regional projects in India



Note: PPP = Public-Private Partnerships, ADB = Asia Development Bank

The global majors will presumably lead the industrialisation and set the standards for future partnering regimes

Key Public-Private Partnerships (PPP) success cases

			
<p>Case 1: Veolia and Suez</p> <p>Global leaders in water, French Veolia Environnement (Vivendi) and Suez Environnement have partnered on PPP water projects and have pioneered the PPP model, injecting finance into the system and driving market growth and consolidation.</p> <p>In a PPP, ownership of assets remains public and only certain functions are delegated to a private company for a specific period.</p>	<p>Case 2: Toshiba</p> <p>The Japanese major global player Toshiba is driving some part of the Delhi Mumbai Corridor through large scale PPP projects funded by Japan Inc.</p> <p>Consortium of Japanese companies (Toshiba-Tokyo Gas-NEC) have signed a MoU* on a priority ECO-city project.</p>	<p>Case 3: Keppel Corp</p> <p>Tianjin Eco-city is sponsored by Keppel Corp from Singapore.</p> <p>The Keppel Group was entrusted to lead the Singapore private sector consortium for a bilateral co-operation project and works in close tandem with a Chinese consortium partner to guide the 50-50 joint venture – Sino-Singapore Tianjin Eco-City Investment and Development Co., Ltd. (SSTEC) – in its role as master developer of the Tianjin Eco-city.</p>	<p>Case 4: Siemens</p> <p>Siemens' new Infrastructure & Cities Sector will manage the company's global business with cities and infrastructures. The new Sector, with around 87.000 employees, will contain the Mobility and Building Technology Divisions from the Industry Sector, as well as the Power Distribution Division and Smart Grid business from the Energy Sector.</p>

* Memorandum of Understanding

Neglecting the change agenda can be lethal to both small and big companies in the Danish cleantech sector

Strategic focus area		From to
Business strategy	Markets	BRIC market, Europe and North America	Mega- and large cities focus on global scale
	Business models	Risk diversification and avoidance	Risk sharing/Risk management
	Business cases	Stand-alone (single bottom line)	Integrated system business case (multiple bottom lines)
Value proposition	Innovation	Walled garden	Open garden
	Products	Engineering and "High end"	Scalable "mass production" developed to local needs
Go to Market	Partners	DIY	Partner with lead turnkey providers
	Sales and marketing	"Push"	Push/pull (key opinion leaders)
	Customer relations	Industrial	Institutional and industrial

In the near future, new and more decisive intervention strategies must be developed to win the battle of the cleantech sector

