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am smart erdam
city

Intelligent City

Concept introduction at ESMIG 2010

March 24th 2010

The Accenture joint Public Services/Resources/Strategy team worked with the client from strategy/solution architecture to execution

Agenda

- **Problem definition**
 - Context
 - Drivers for change
- **Solution description**
 - Focus areas
 - Concept
 - Approach and role Accenture
- **Value for initiators and partners**
- **Successful execution elsewhere**
- **The financial aspect**

- **Appendices**

Accenture Team

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Climate change needs to be halted and current electricity networks need to be upgraded – these changes can best be initiated in cities

The climate is changing ...

- EU inhabitants use twice as much energy than the global average
- Only 7% of 2006 EU energy consumption was renewable
- Fossil fuel reserves are limited
- Climate is changing fast due to increasing greenhouse gas emissions (mainly CO₂)

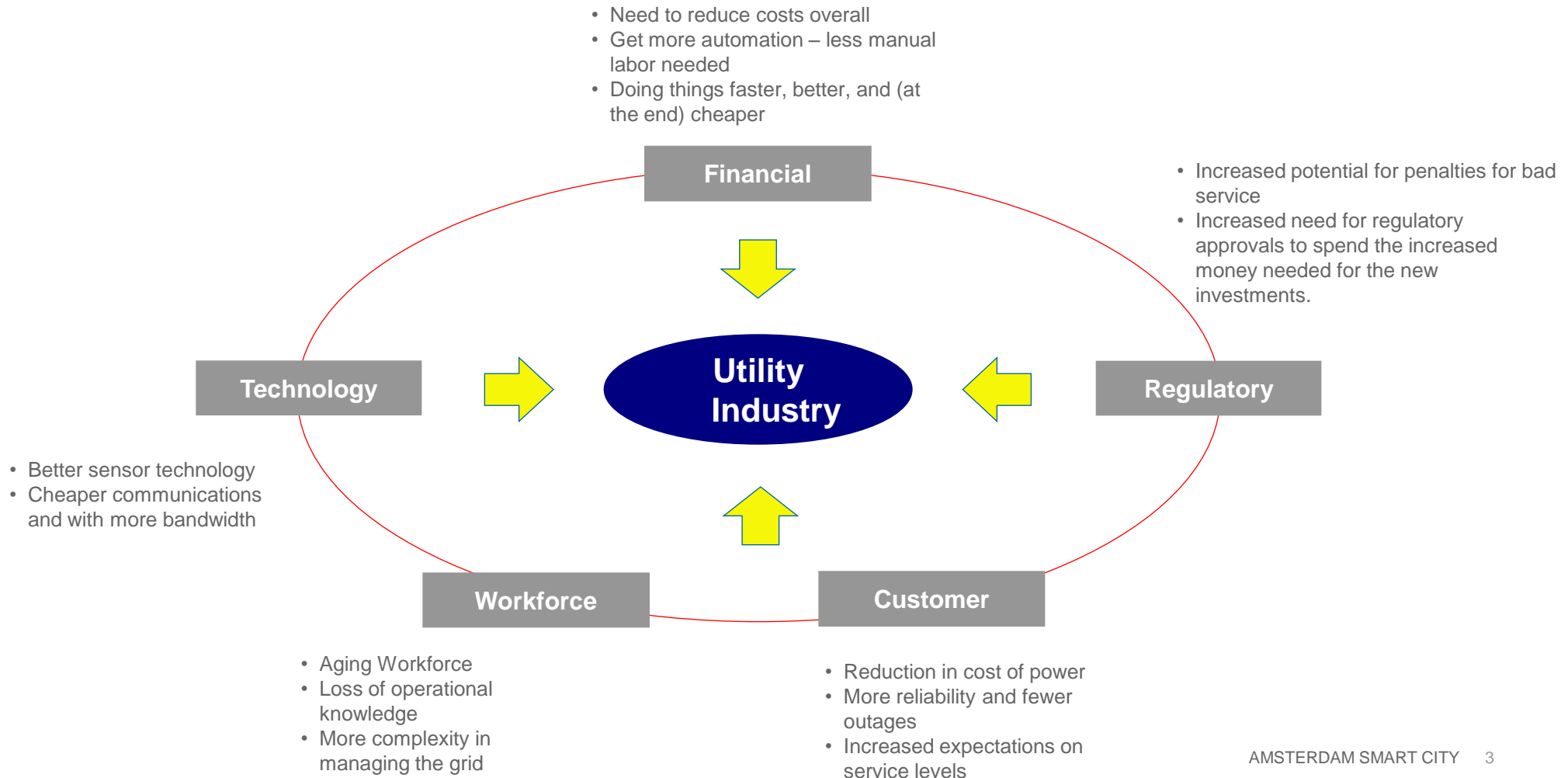
... and new electricity grids are required

- Energy trends include: decentralized energy generation, energy storage, electric vehicles and (more fluctuating) renewable reverse energy flows
- These developments require flexible 'smart grids'
- Current EU electricity grids are not ready for these changed energy dynamics and need to be upgraded

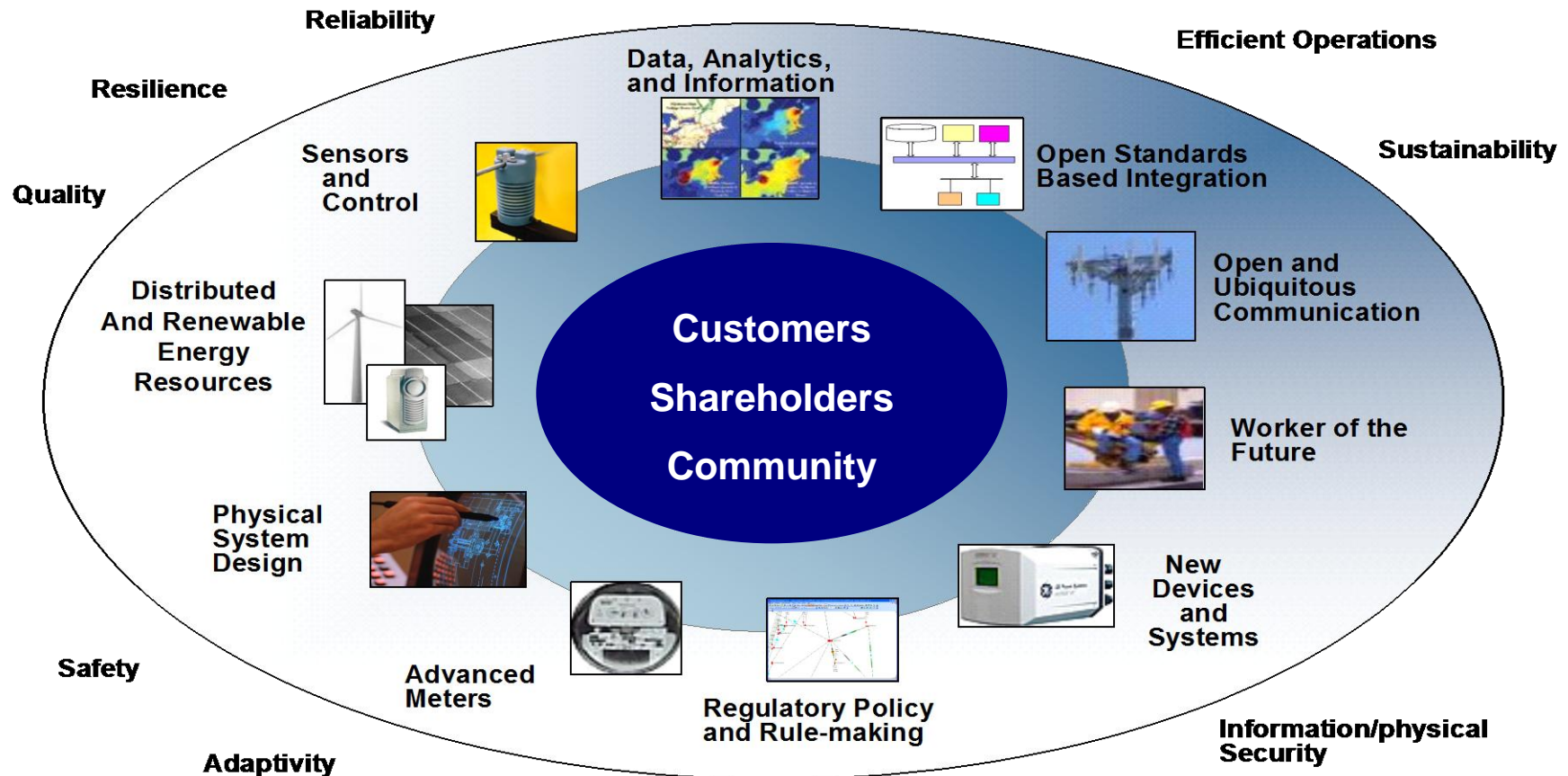
Start in cities

- Over half of greenhouse gas emissions are created in and by cities: 80% of the population lives and works in cities, where up to 80% of energy is consumed *
- Mayors can address the development of alternative energy or pollution control, energy management or changes in behavior by public authorities and citizens in a coherent way *
- At the city level, the required coalition of private parties with ideas & technologies and public parties with trust of inhabitants can be brought together to build effective, scalable concepts
- Therefore, cities are the most suitable platform to start the movement towards a more sustainable future, enabled by a new generation of grids

A number of forces are at work impacting the utility industry. Aging workforce and shareholders demands for greater efficiency as well as proven results in Field and large scale deployments will drive the industry to action.

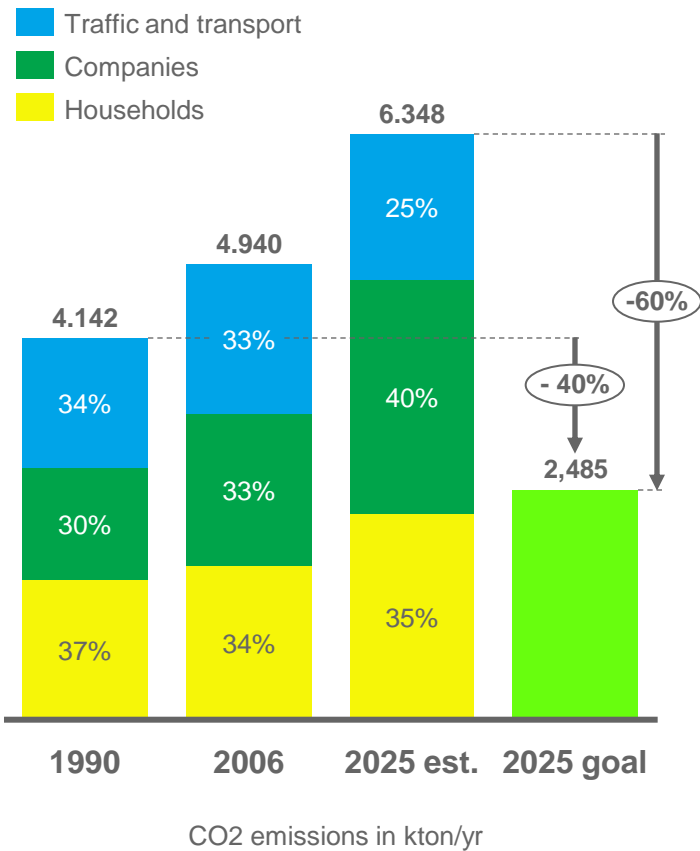


Our view is that Smart Grid can help to overcome those challenges. Understanding each dimension of the solution will lead to a different set of benefits focused on the customer experience and shareholder value.

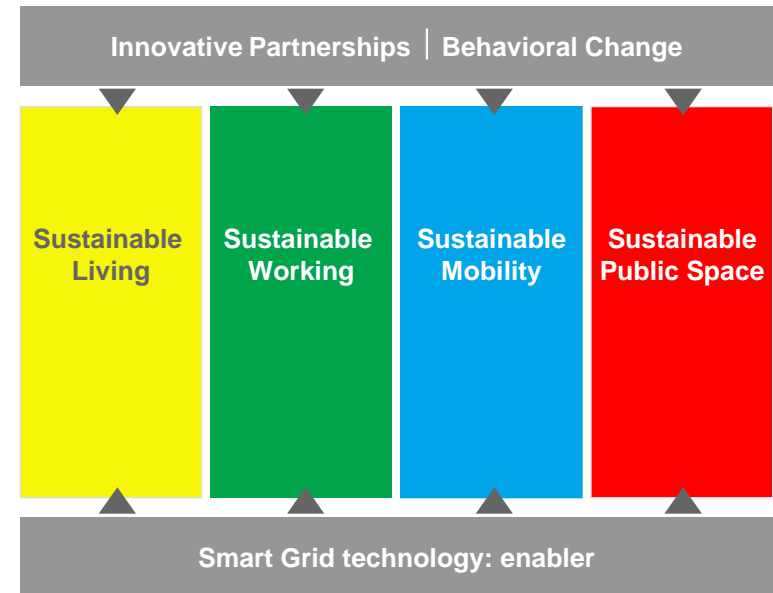


ASC reduces emissions by focusing on Sustainable Living, Working, Transport and Municipality enabled by Smart Grid technology

CO2 emissions Amsterdam



Focus areas ASC



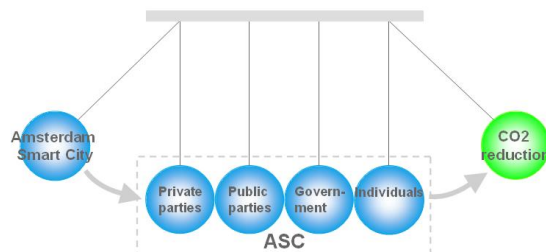
Municipality is treated separately because of scope and ambitious internal climate targets

ASC aims to fulfill its clients goals with a collective effort that combines innovative and economically viable technology with behavioral change

Solution Concept

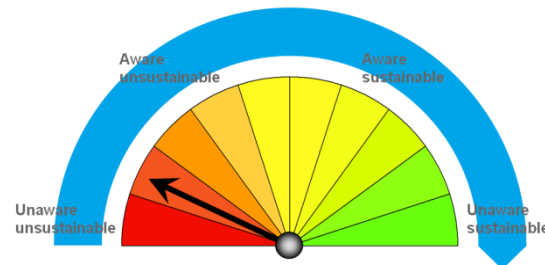
- Amsterdam Smart City is designed as an accelerator for climate/energy programs, bringing parties together and initiating projects that reduce CO2 and yield local best practices for full scale roll out
- Amsterdam Smart City is based on 3 key principles:

Collective effort



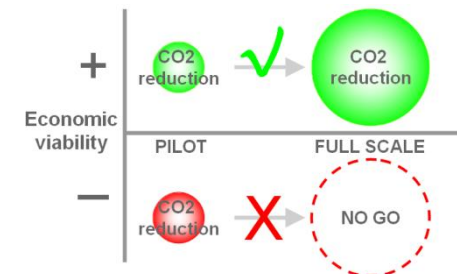
- The momentum for CO2 reduction is stopped without result if any of the required parties in society does not cooperate
- Therefore a collective effort of activating and involving all parties is required to realize CO2 reduction

Tech push / demand pull



- Stimulation of behavioral change creates a demand pull for more sustainable technology
- Application of innovative technology results in a technology push towards sustainable behavior

Economic viability



- Economically unviable initiatives will never be applied in a large scale
- Only economically viable initiatives (for all stakeholders) are interesting to apply on a large scale and can therefore have a large CO2 impact

Solution description – Successful execution (Amsterdam)

ASC meets the key challenge: together with an ever-growing alliance of partners, a constant flow of pilot projects is started in all focus areas

Partners



Type of partner overview:

- Grid operators / Utilities
- Governmental org's
- Housing corporations
- Port of Amsterdam
- Techno starters
- Universities
- Financial institutions
- Telecom / ICT
- Transport / Waste
- Etc.

Project overview

Sustainable Living	Sustainable Working	Sustainable Mobility	Sustainable Public Space
In progress: equip 728 Geuzenveld homes with smart meter and behavior changing initiatives	Planned Q3 2009: equip the ITO Tower (large office building) with diverse energy saving and behavior changing technology	In progress: equip the Port of Amsterdam with 73 shore power connections for inland freighters and river cruisers	
In progress: equip 500 Ymere homes with smart meters and energy feedback displays to stimulate behavioral change			
In progress: Turn the downtown 'Utrechtsestraat' into a Climate-street by implementing a holistic concept of sustainable logistics and energy saving / behavior changing initiatives with residents, entrepreneurs and in the public space			
			Target: 20 pilots in 2009-2010

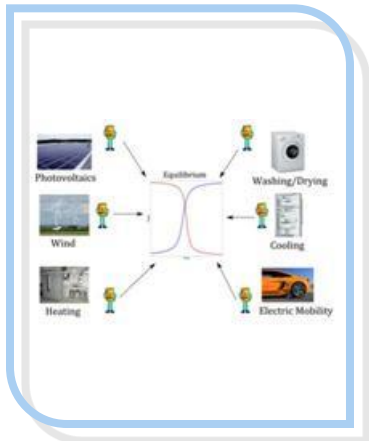
Technologies applied in projects:

- Smart meters
- Energy displays / feedback
- New logistics/waste models
- Smart (LED/saving) lighting
- Electric vehicles
- Charging terminals
- Energy advice
- Etc.

Amsterdam Smart City is preparing five new projects for the second wave

1

Innovative Smart Grid Technology



2

Innovative Financing



3

Fast Charging for EV



4

Mayor's House

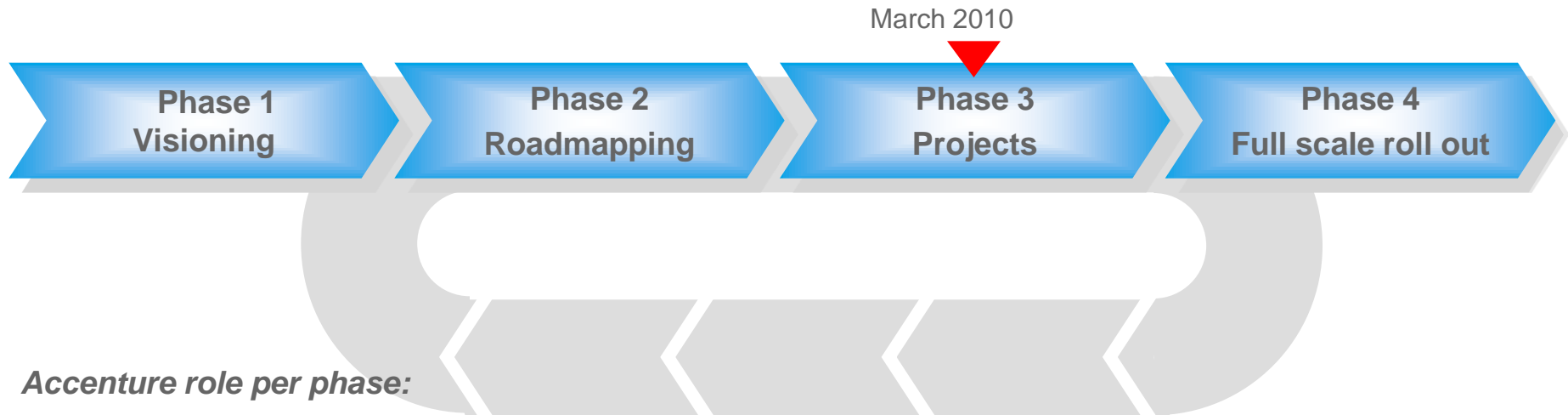


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Smart Schools



ASC follows a clearly structured pathway of continuously selecting, developing and scaling the concepts with the best (CO2) Value Cases



Accenture role per phase:

Visioning & Strategy

- Develop Vision & Strategy
- Define business case, principles and technical architecture
- Determine approach

Concept Development

- Pre-select initiatives on feasibility, costs and CO2 reduction potential
- Contact and organize partners
- Develop program plan and legal framework (incl. governance model)

Value Delivery

- Develop project / comms plans and business cases
- Secure funding from partners
- Execute projects and monitor business case realization
- Integrate projects into INDE*

Strategy = Execution

- Evaluate and select successful initiatives and partners
- Communicate results
- Support (tenders for) full scale implementation and leverage with other offerings

ASC enables our clients and all other program partners to realize significant economic and social value on a city level

City value

Amsterdam

- Reach sustainability and carbon emission reduction goals
- Create a good place to live, drive creation of new economic activities
- Being an innovation leader in this area will position Amsterdam as a sustainable region ('sustainable valley')
- By investing in ASC, Amsterdam will create over 800 new jobs over the coming 3 years
- Deliver over 25% carbon reduction in scope pilots and yield best practices for full scale roll out

Grid operator / Utility value

Alliander

- Become a leader in smart grid development
- Create a grid suited for future developments
- Address its societal mission and community involvement
- Alliander will commercially leverage its smart grid knowledge among other grid operators
- Identify new business opportunities
- By investing upfront in ASC, the lessons learned will minimize future risks related to Alliander's investments related to Smart Grid development until 2020

Program partners value

All other parties

- Gain a lead for the future through the lessons learned from collectively working on delivering climate goals in ASC
- Profit from the reduced cost / effort of realizing pilots through facilitation & support of the ASC organization
- Realize turnover through the positive business case for all applied initiatives

Here are some examples of different Intelligent city visions ...

	Type	Drivers	Sample of Concepts Applied	Investment	CO ₂ Push
	Retrofit	Sustainable City <ul style="list-style-type: none"> • Reduction of CO2 emissions • Reduction of energy consumption • Incorporation of renewable in the energy production mix 	<ul style="list-style-type: none"> • Smart meters / displays • New logistics/waste models • Smart street lighting • Electric vehicles • Charging terminals • ... 	€1.1 billion (€3.2m 1st P.)	
	Retrofit	Smart Technology City <ul style="list-style-type: none"> • Infrastructure reliability • 1st mover for energy new technologies 	<ul style="list-style-type: none"> • Full Smart Grid • Distributed Generation • Sensors and controls • Energy displays • Smart Sub-stations • ... 	€100 million	
	New Build	Living Laboratory Smart City <ul style="list-style-type: none"> • Knowledge Economy • Job Creation 	<ul style="list-style-type: none"> • Smart traffic management • Automated transportation • Distributed Generation • Mobility on Demand • Waste to Energy • 	~ €15 billion	

● Very High
 ◐ High
 ◑ Medium
 ◒ Low
 ○ Very Low

Project description

Concept

The Climate-street pilot is a holistic concept for urban shopping streets, targeting all aspects: hardware in the public space, logistics in the street and the interiors of shop/bar/restaurant owners and people living in the street

Project location: Utrechtsestraat



Applied initiatives

Public space

- New sustainable street/facade lighting saves energy threefold: integrating street- and facade lighting eliminates over-lighting, energy efficient light bulbs are installed and the entire system can be dimmed late at night
- Tram stops and billboards are replaced by more sustainable versions based on Life Cycle Analysis, the required power for displays & light is generated by solar panels
- Garbage bins with built in solar-powered garbage press reduce the empty frequency by 5 times! Saving fuel, money & congestion

Logistics/Waste

- Goods of various freighters are delivered at a central location outside the city centre where they are stored and forwarded (bundled) with electric vehicles to the entrepreneurs in the street.
- As these vehicles are empty as they leave the street they collect the waste in new clean waste ‘boxes’ in the same run, thereby minimizing traffic intensity and pollution

Interior

- Smart electricity and gas meters with energy feedback displays
- Energy saving interior lighting + advice
- Etc.

am smart erdam city

Slimme projecten die de wereld gaan veranderen.
We testen ze eerst in Amsterdam.

[HOU MIJ OP DE HOOGTE](#)



[BEKIJK DE VIDEO](#)



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