



**TOGETHER**  
*for a sustainable future*

1966 - 2016

# UNIDO - Sustainable Cities

## Department of Energy

---

Alois P. MHLANGA  
Project Manager  
[a.mhlanga@unido.org](mailto:a.mhlanga@unido.org)

# 1. Energy Management Systems for Cities

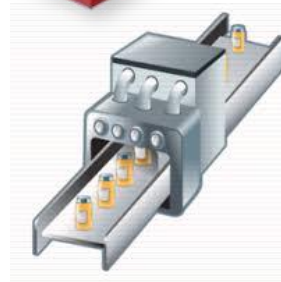
## City



1. Municipal Corporation
2. Municipal/Public Companies
3. Private companies providing regulated services
4. Private companies
5. Citizens/Households
6. Others

## Industry

1. Public companies
2. Private companies
3. Others



## Rationale

- EnMS-ISO 50001 also for Public & Municipal organizations
- Cities authorities responsible for large energy consumption as well as for energy planning
- Cooperation between cities authorities & industry for integrated energy planning & sustainable development

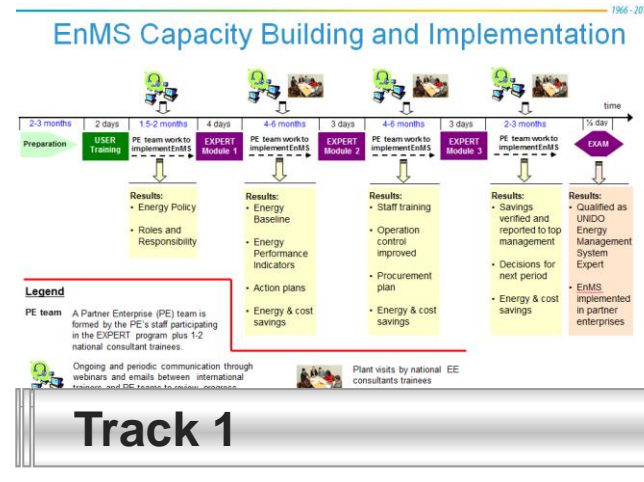
# Example 1 - Energy Management Systems for Cities

## Objectives

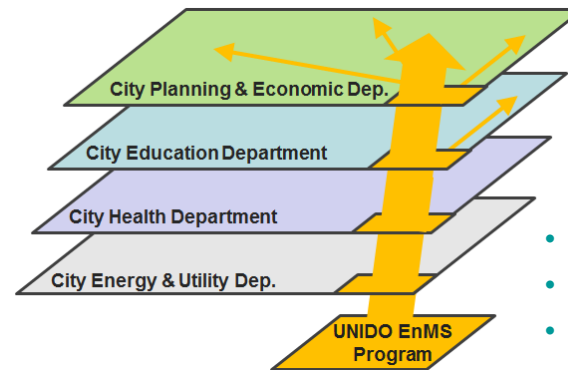
- Extend and scale-up results of EnMS industrial program → create market
- Energy efficiency in industrial and municipal enterprises
- Energy, Costs and GHG savings plus multiple socio-economic benefits
- Systematic approach and organizational improvements for energy management in support of Sustainable City and Development Programs/Goals

## Modalities and focus

- ✓ Training and competencies development
- ✓ Partnerships for piloting and results
- ✓ Initial focus on people, processes and no- and low-cost energy savings



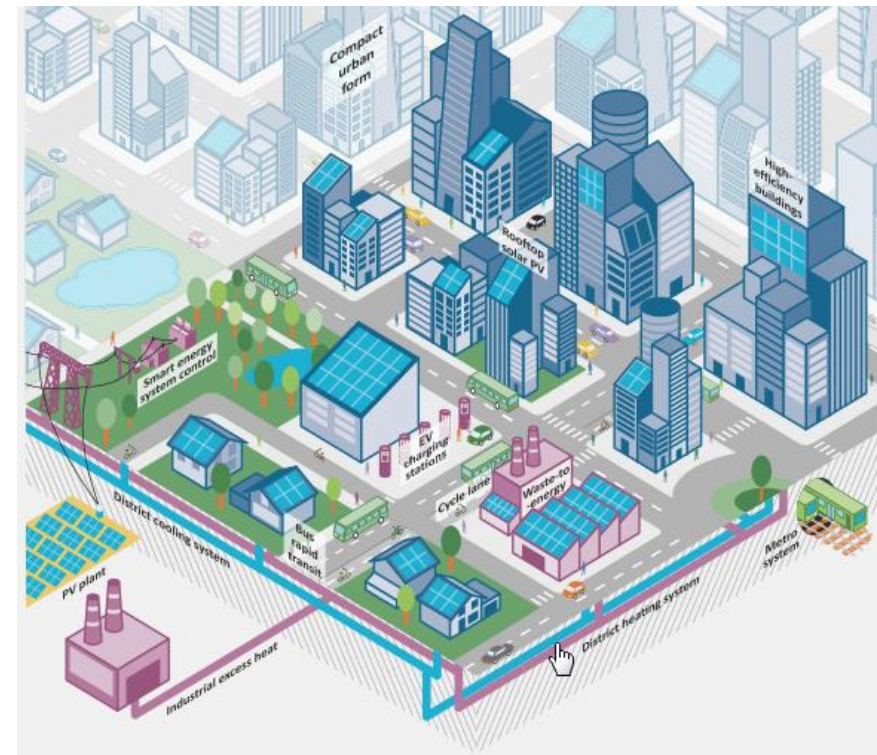
Naberezhnye Chelny



# 2. Renewable Energy for Sustainable Cities

## Demonstration, policies and business models

Key elements of sustainable urban energy systems



Source: OECD/IEA 2016

### Waste-to-Energy

- Municipal SW (thermal recovery for electricity / district heat)
- Sewage sludge / Organic waste (biogas for electricity and as CNG)

### Rooftop Solar PV

- Unused urban space as power plants
- Also, solar PV (and wind micro turbines) for electric vehicle charging, paired with storage

### Solar thermal ( heating/cooling)

- Industrial applications
- Water heaters

# Example 2: Sustainable cities initiative for Senegal

## Objective

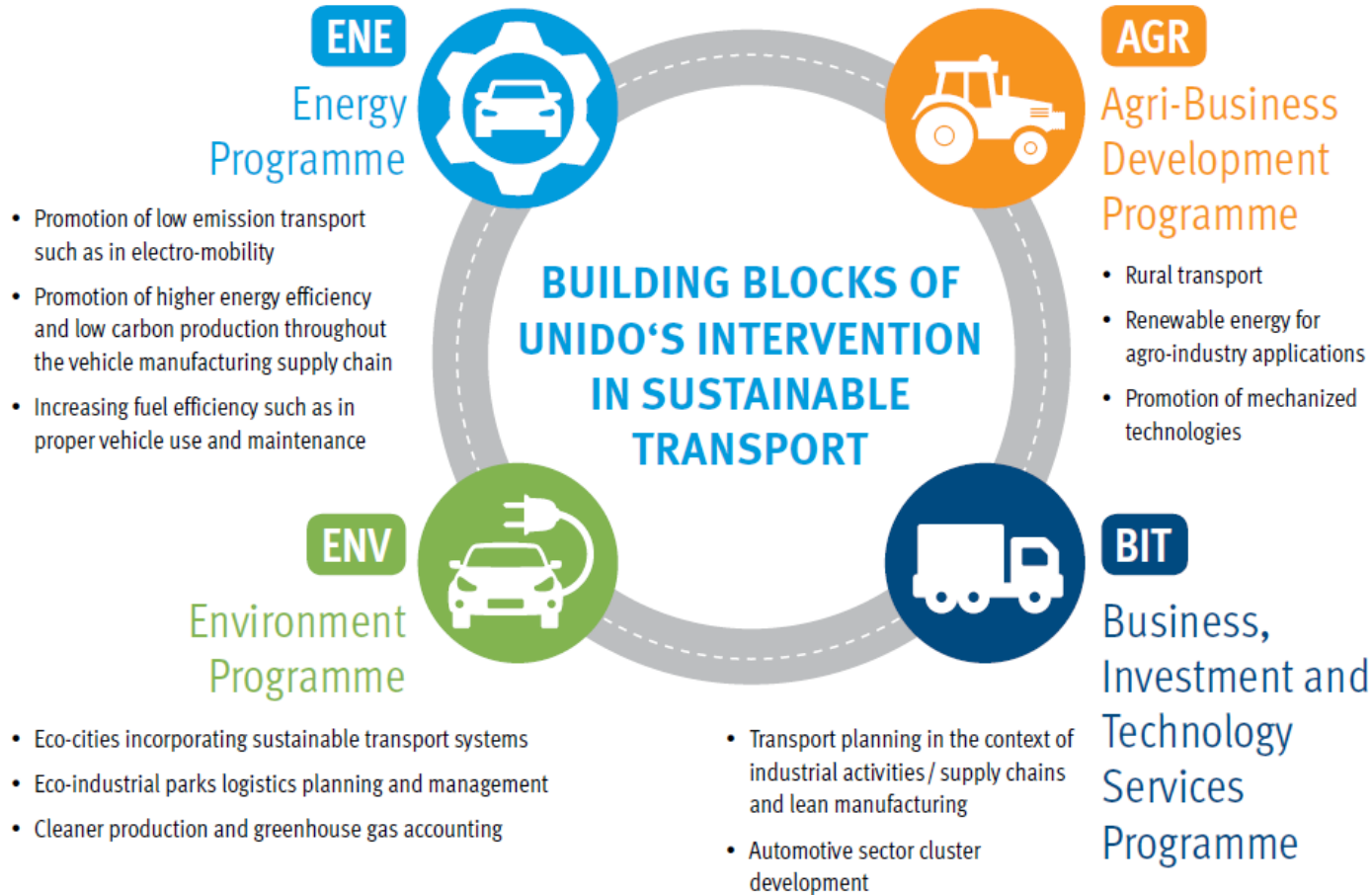
- To improve capacity to plan and implement sustainable city management practices, including climate resilience, in selected urban areas

## **C1 Integration of climate risks in urban planning and management (WB)**

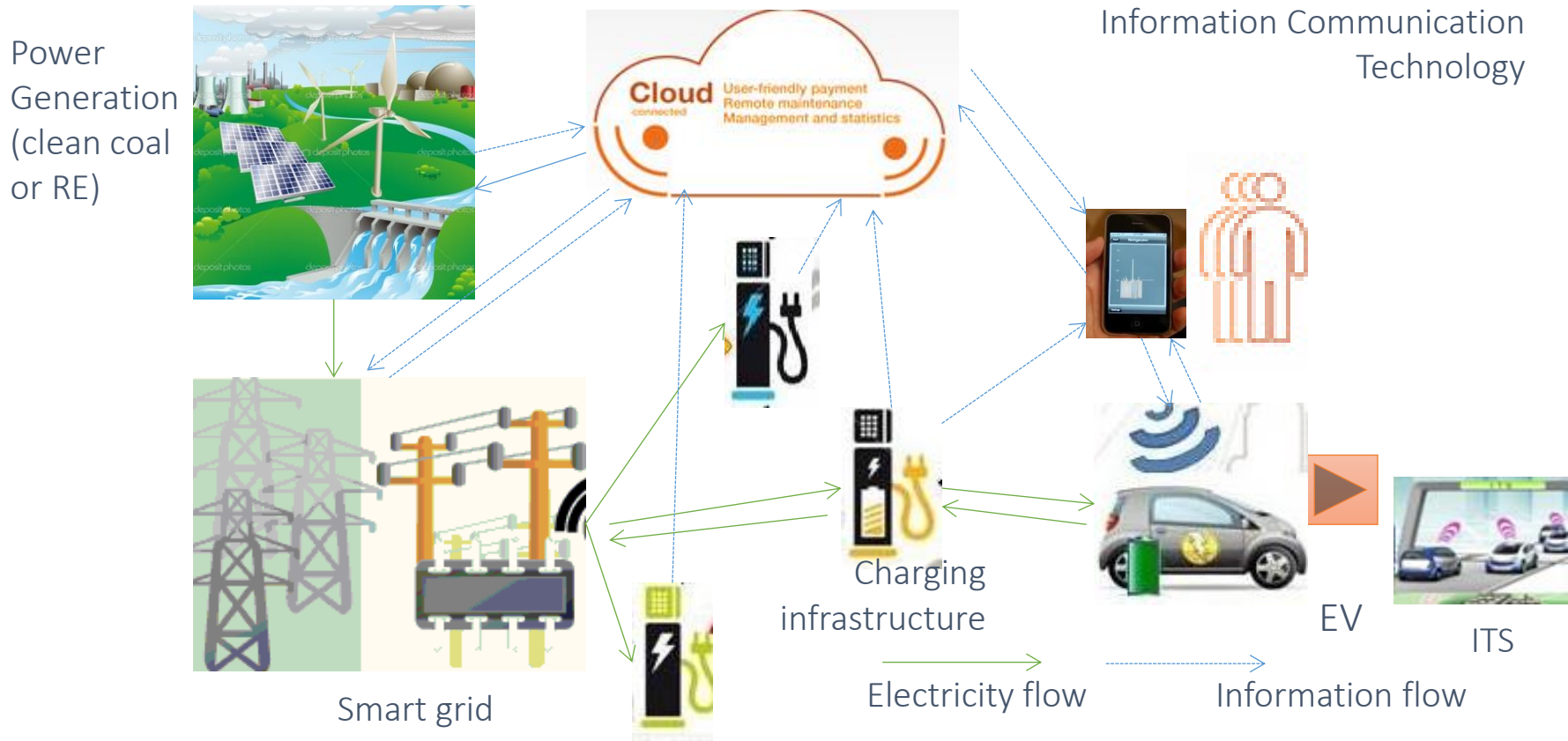
## **C2 Promote renewable energy, integrated waste management in sustainable industrial parks (UNIDO Component)**

- Strengthening of national capacities on integrated urban planning for sustainable industrial parks
- Integrated POPs and hazardous waste management system designed
- Enabling framework created for implementing sustainable and resilient industrialization
- Increased use of RE/EE and other low-carbon technologies to reduce carbon intensity of industrialization and urbanization in Dakar and Diamniado

# 3. Transport within Sustainable Cities



# Example 3 - The energy infrastructure for Electric Vehicles in China



NEV supply and energy storage cycle - Vehicle to Grid (V2G) technologies

# Thank you for your attention!

---

## Contact details:

Alois P. MHLANGA

Project Manager

Department of Energy

E-mail: [a.mhlanga@unido.org](mailto:a.mhlanga@unido.org)

[sustainablecities@unido.org](mailto:sustainablecities@unido.org)