Smart Cities and Infrastructure

Introduction of the Secretary General's Report
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Contents of the Report

1. Urbanization trends
2. Defining smart cities
3. Challenges related to smart cities and Smart Infrastructure
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Urbanization Trends

2008: World Urban population exceeded the rural population

2050: Two-thirds of global population will live in Cities

2030: 60% of global population will live in Cities

Growth of urban areas during **2000-2030**, will be larger than the cumulative expansion in human history

Cities account for **70%** of global energy use and greenhouse gas emissions but only occupy **5%** of the earth's landmass.

ENERGY

Anticipated global infrastructure investments in the next **40** years will be higher than the cumulative infrastructure spending of the past **4000** years
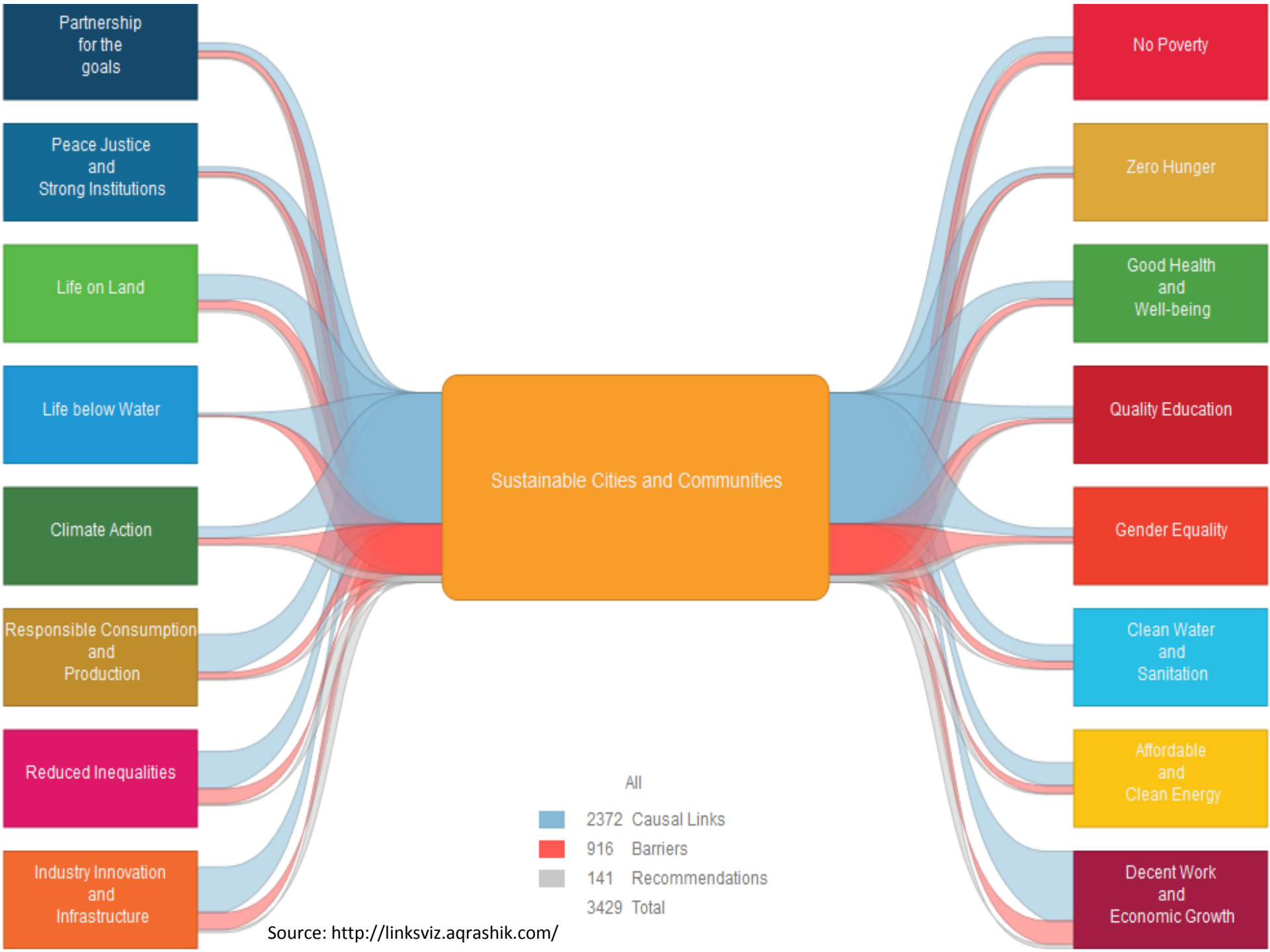
Source: http://linksviz.aqrashik.com/

Left nodes (top to bottom):
- Partnership for the goals
- Peace Justice and Strong Institutions
- Life on Land
- Life below Water
- Climate Action
- Responsible Consumption and Production
- Reduced Inequalities
- Industry Innovation and Infrastructure

Center node: Sustainable Cities and Communities

Right nodes (top to bottom):
- No Poverty
- Zero Hunger
- Good Health and Well-being
- Quality Education
- Gender Equality
- Clean Water and Sanitation
- Affordable and Clean Energy
- Decent Work and Economic Growth

Legend: All

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2372	Causal Links
916	Barriers
141	Recommendations
3429	Total

Definition of Smart Cities

*"A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and **other means** to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects"*

ITU study group on SSC
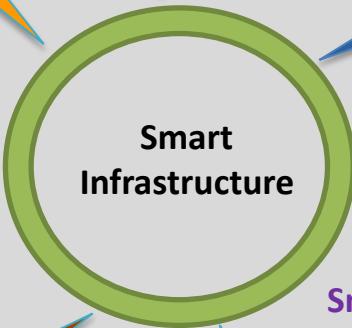
Smart Digital Infrastructure
Helps monitor different parameters of the city; analyze the data collected

Smart Buildings
Improve comfort of users ; optimize usage of utilities,

Smart Health
Shift in focus to prevention; remote access to healthcare and personalized healthcare solutions

Smart Infrastructure

Smart Mobility
Optimize traffic conditions; customized traffic solutions; reduce environmental footprint

Smart Waste Management
Improve efficiency of waste collection, pickup, separation, reuse and recycle

Smart Energy
Optimize energy distribution and usage; enable community-based energy monitoring

Smart Water
Reduce cost and leakage; increase reliability and transparency of water distribution

Challenge I : The Need for Localization of Smart Infrastructure

Harness the local innovation system
Case Studies:
'Smart Shack' South Africa
Collaborations between two science parks and several other stakeholders for smart mobility project, Sweden

Promote Open Science and Open Data Models
Case Studies:
Apps4SG competition, Singapore
Civic Hacking events worldwide

Establish urban innovation units, living labs and exploit regional innovation networks
Case Studies:
The new urban mechanics lab in Mayor's office, Boston, USA
European Innovation Partnership on Smart Cities and Communities

Challenge II : Skills Gap

Accelerate STEM education programs
Case Studies:
The Urban data school, UK
Science of Smart Cities Program, USA

Reform Curriculums, Promote Multi-disciplinary Learning
Case Studies:
MOOC on 'Smart Cities', The Open University

Partner with Technology Firms
Case Studies:
Cisco and IBM partnerships with city governments

Challenge III : Lack of Finance and well developed Business Models

Develop Technology Driven Innovative Financing Models
Case Studies:
Provision of drinking water through the *Jisomee Mita* programme, Kenya
KFW scheme to monetize the energy efficiency gains of buildings, Germany

Monetize Data

Caveat ⚠

Ensure protection of privacy

Generate finances through smarter use of existing public resources
Examples:
Better use of public resources,
Efficient taxation, case study: Kampala, Uganda

Challenge IV: The Governance Challenge

Challenge V : Making Smart Cities Inclusive

Help to formalize the informal sectors through smart applications
Case Study:
Applying mobile technology to map the informal settlements and informal sectors, Brazil, Monrovia & Tanzania

Provide affordable smart infrastructure for the informal sector
Case Studies:
M-KOPA: Combining mobile technology and solar power to make available and affordable energy solutions for informal settlements, East Africa

Make Smart cities gender sensitive

Smart Infrastructure Design Principles

People-Centered and Inclusive Infrastructure

Resilience and Sustainability

Interoperability and Flexibility

Managing Risks and Ensuring Safety

Recommendations

Governments
- Adopt a participatory and integrated approach to smart city development
- Integrate the smart city agendas within national STI and ICT policies
- Strengthen the core ICT infrastructure
- Conduct skill gap analysis within workforce
- Promote open data and open science models
- Incorporate insights obtained from data generated from smart city into the governance process

International Community
- Develop interoperability standards and other standardization measures
- Promote regional collaborations for pilot projects and for benchmarking

CSTD
- Highlight the critical role of STI community in facilitating smart cities
- Share and analyze evidence on successful examples of localization of smart infrastructure
- Provide a forum to share evidence on successful models that incentivize local innovation