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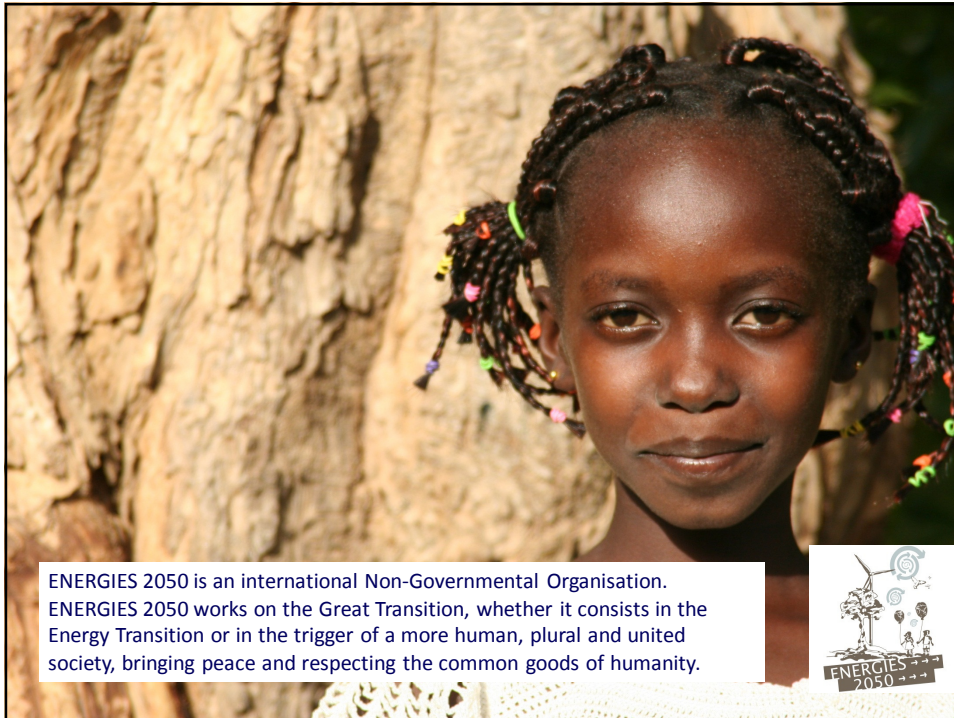
Resource Efficiency and Green Economy: Opportunities for Sustainable Buildings and Cities

Buildings and sustainable cities in sub-Saharan Africa: Challenges, Issues and Opportunities Sao Paolo, June 13th 2012

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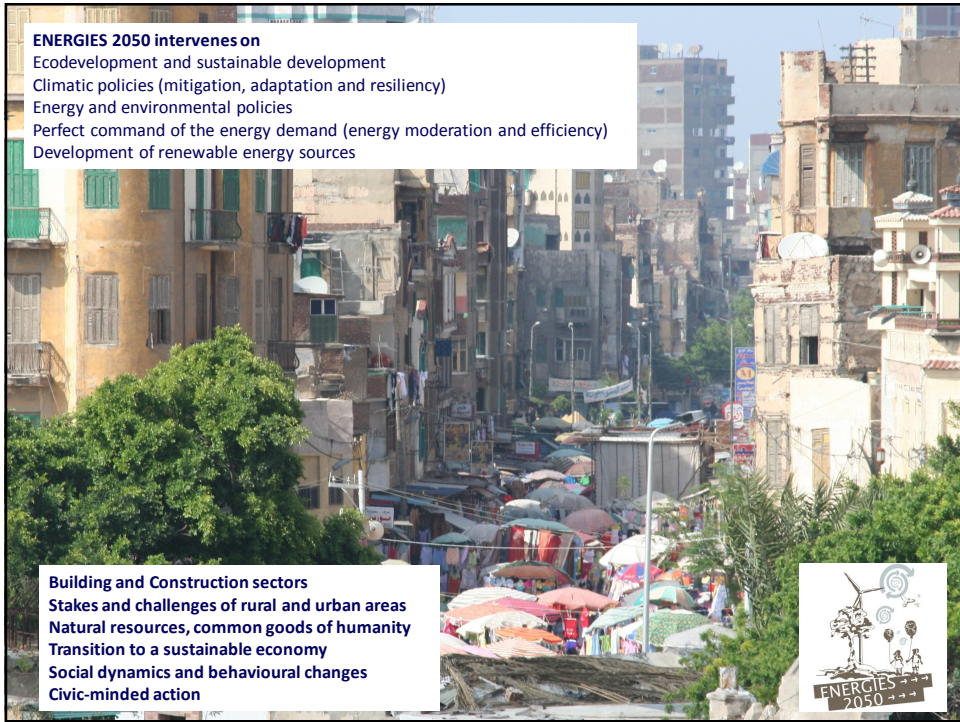


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ENERGIES 2050 is an international Non-Governmental Organisation.
ENERGIES 2050 works on the Great Transition, whether it consists in the
Energy Transition or in the trigger of a more human, plural and united
society, bringing peace and respecting the common goods of humanity.





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Scope of our study

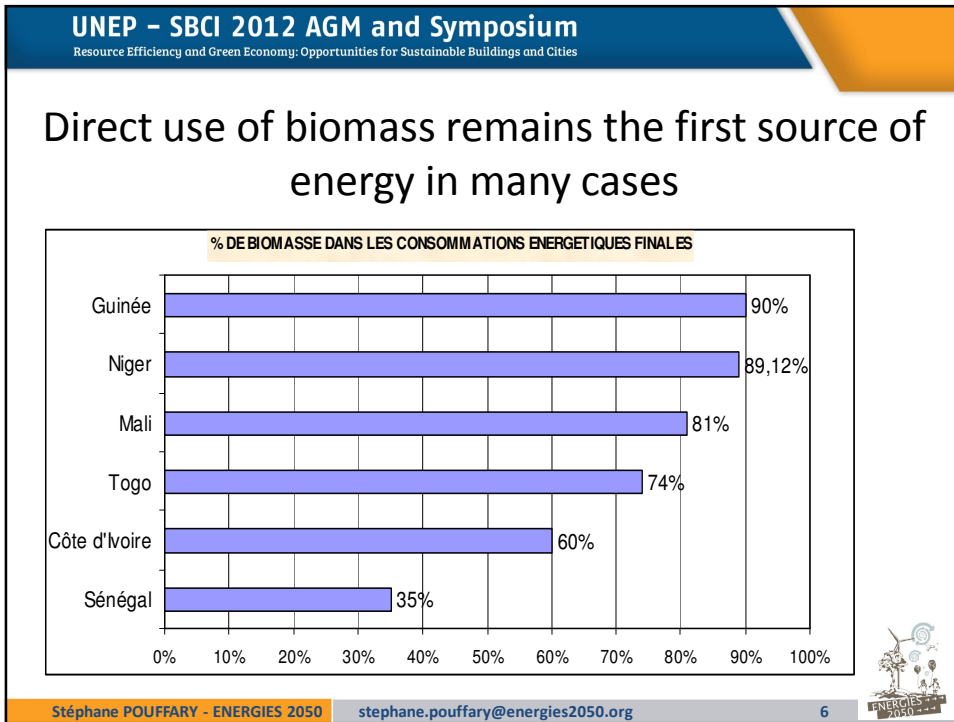
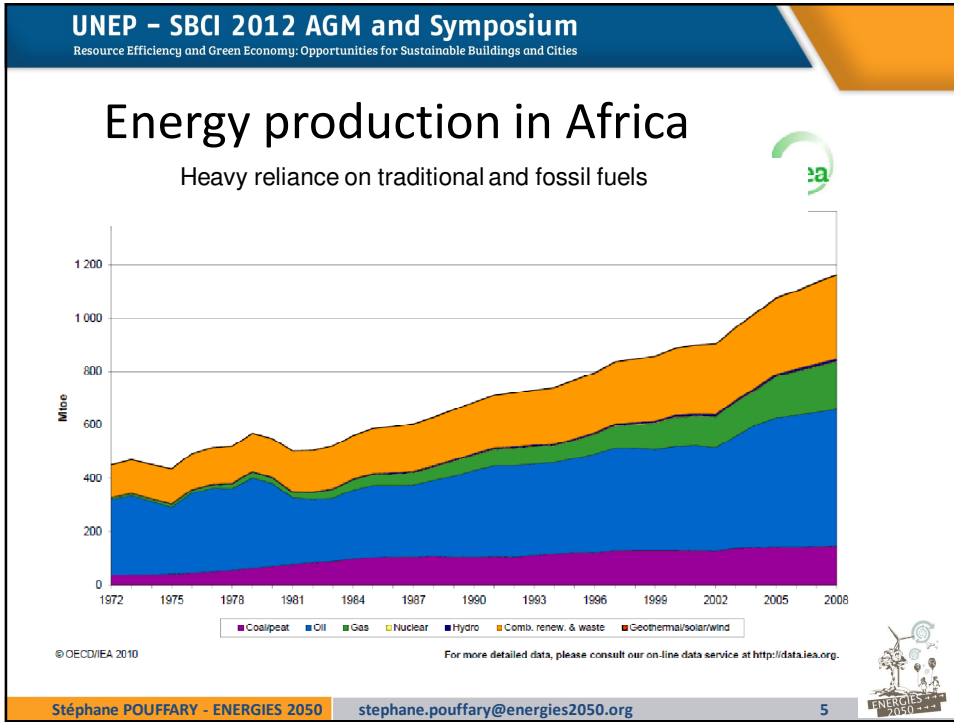
Africa in some words

- Since July 2011, officially 54 countries
- Few reliable data and statistics
- Nearly 1 billion inhabitant in 2010 of which 80% in Sub-Saharan countries

Region	2007 (Population in millions)	2030 (Population in millions)	CAGR (%)
Africa	~1000	~1400	2.0%
China	~1300	~1400	0.4%
India	~1100	~1400	1.1%
Other Asia	~1000	~1400	0.9%
Latin America	~600	~700	2.9%
OECD North America	~500	~550	0.8%
E. Europe	~400	~350	-0.1%
Eurasia	~400	~450	1.6%
Middle East	~300	~350	0.1%
OECD Pacific	~200	~250	-0.1%

- One of the strongest population growth rate in the world (Africa to be at the first place in 2030)

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Access to electricity is critical

	Population sans électricité (million)	Taux d'électrification %	Taux d'électrification en zone urbaine %	Taux d'électrification en zone rurale %
Regional data aggregated				
Afrique	587	41,9	68,9	25,0
Afrique du Nord	2	99,0	99,6	98,4
Afrique Subsaharienne	585	30,5	59,9	14,3
Pays en dével. d'Asie	799	78,1	93,9	68,8
Chine & Asie de l'est	186	90,8	96,4	86,5
Asie du sud	612	62,2	89,1	51,2
Amérique Latine	31	93,4	98,8	74,0
Moyen-Orient	22	89,5	98,6	72,2
Pays en développement	1 438	73,0	90,7	60,2
Économies en transition & OCDE	3	99,8	100,0	99,5
Monde	1 441	78,9	93,6	65,1

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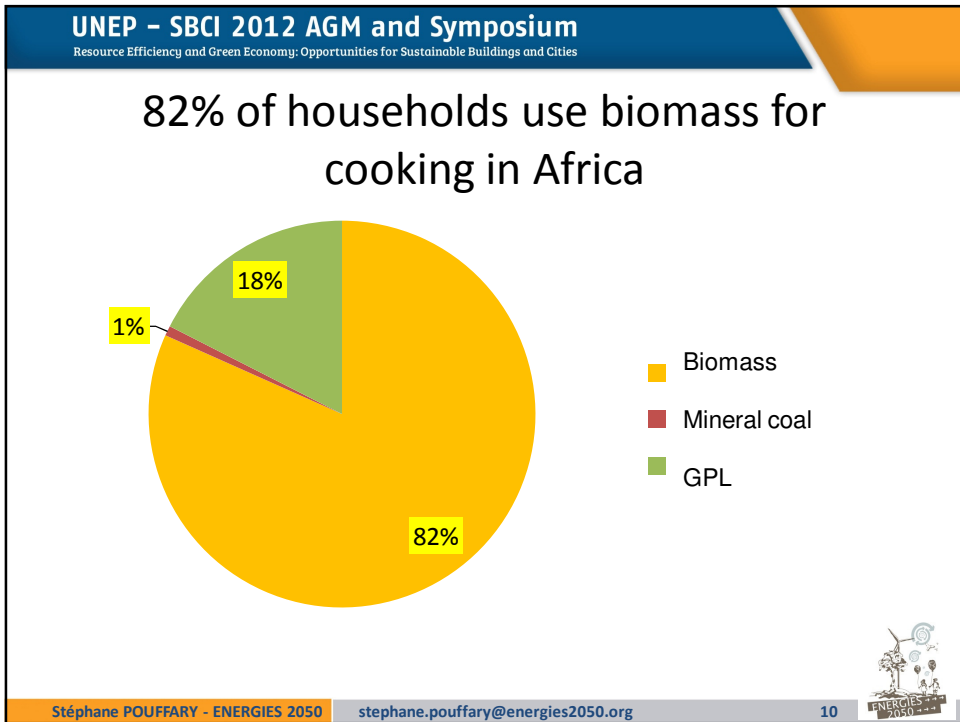
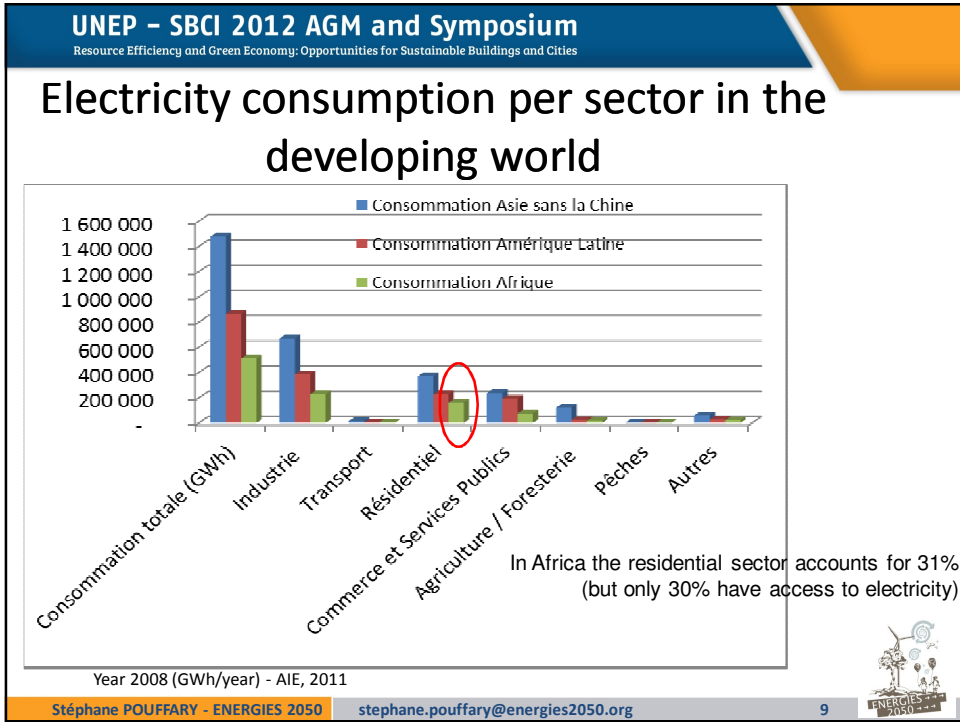
Many different country profiles

	Taux d'électrification (%)	Population sans électricité (million)
Benin	24,8	6,7
Burkina Faso	14,6	13,5
Cote d'Ivoire	47,3	11,1
Ghana	60,5	9,4
Nigeria	50,6	76,4
Senegal	42,0	7,3
Togo	20,0	5,3
Autres pays d'Afrique	17,0	85,2
Afrique Sub-saharienne	30,5	585,2

AIE / OCDE: World Energy Outlook 2010

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Africa's energy challenges

- Africa is the continent where energy is most expensive
- Energy access is a priority
- Access to energy services is the main challenge to eradicate poverty
- The low consumption of commercial energy is a hallmark of energy poverty in Africa
- In the same time, significant energy demand growth to answer specific new electricity needs and comfort requirements

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High population growth coupled with a rapid, continuous and relentless Urbanization process

- In Sub-saharian countries, rural areas account for 60% of the total population but urbanization is a tremendous
- 1.4 billion of Africans will live in cities in 2050
- High pressure on natural resources and energy demand
- Sharp increase of informal settlements and energy poverty



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Challenges remain the same Cities at the forefront

Relies on Highly interdependent integrated systems

Urban density. Suburban and peripheral belts development.
Transport networks. Water and energy management, distribution.
Communication networks. Etc.

A better “Quality of life” as a performance measurement tool

Access to water, energy, efficient transportation system, quality housing, food, health, education, security, a wastewater treatment and waste management networks... as well as a healthy environment, a sufficient number of decent jobs and more personal notions such as the well-being, happiness or social equity.

Any impact on one area affects another area



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Building sector generic barriers remain the same

- Well identified and referred globally to the complexity of the built environment even if not so well documented in the African context
- Fragmentation of the sector, long tail characteristics, lack of knowledge, information and awareness, poor energy management skills and tools, lack of appropriate financial tools, difficulties to give a commercial value to buildings with high energy performance...)



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Photography of the built environment in Africa

- A sector with constraints and opportunities insufficiently known (no need for heating, electricity availability strongly deficient and constrained)
- Construction unsuited to the climate (poorly insulated roofs, inappropriate orientation, no protection from the sun to the south, low thermal inertia material, energy equipment with low performance)
- Needs in surge (strong demographic and urban growth, electricity consumption growing rapidly and a heightened expectation of comfort in times of high heat...)



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A heterogeneous construction sector

Public buildings, hotels, offices, large residential buildings

Construction by large groups with the possibility to apply international standards

Individual houses and small buildings

Provided by local SMEs with traditional methods, implementation of simple materials and equipment.

Self-construction and informal construction (Construction performed by unqualified people, outside of any standard or regulation)

The conditions for success: Respect the coexistence of these three markets.

One can not advance by a strict regulatory pathway such as buildings codes. Need to work on solutions that can move progressively from one to another.



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A high energy efficient African building: myth or possible reality?

3 issues to work on simultaneously:

- **Increase Energy efficiency** - A suitable building instead, an enhanced insulation on the roof for sun protection, solar protection devices and passive cooling, ventilation control, uptake of passive solar energy, optimization of energy consumption of appliances
- **Develop Renewable energy generation** (at least solar thermal for water heating and depending on the financial scheme solar photovoltaic for electricity production, geothermal surface for cooling)
- **Increase energy sobriety** (behavioral changes)

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On going activities

Design of a new program “Villes francophones durables”* with a special focus on low incomes countries.

On behalf of the Organisation Internationale de la Francophonie (OIF - organisation that gathers 58 French-speaking countries and 19 associated States) and its subsidiary organization the Institut de l’Energie et de l’Environnement de la Francophonie (IEPF - Institute for the energy and the environment of French-speaking countries).



Institut de l'énergie et de l'environnement
de la Francophonie
IEPF

* First phase was implemented by the OIF between 2005 and 2011 and has concerned the following cities: Bamako (Mali), Ouagadougou (Burkina Faso), Ho Chi Minh City (Vietnam), Bujumbura (Burundi), Marrakech (Morocco), Yaoundé (Cameroon), Cotonou (Benin) and Douala (Cameroon).

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Preliminary conclusion - Buildings in Africa an underestimated treasure of opportunities

- Act now to avoid Lock in effect
- Work first on adaptation, increase resilience and when it is possible on mitigation
- Mix appropriate financing schemes (donations, loans, carbon mechanisms) with a special focus on sustainability and poverty eradication (energy poverty)
- Anticipate new market mechanism with MRV expectation
- Design appropriate building code to be supported by NAMAs (Nationally Appropriate Mitigation Actions)

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Conclusion, the way forward Buildings and cities - Drivers of change for Africa

- Sustainable cities and sustainable buildings need to be put in the upfront of national and international agendas
- Working toward a green economy revolution
 - For a low carbon society without reducing Cities (and buildings) footprint would not only be unrealistic but would also consume time and money for predictable poor results.
- Importance to transform constraints into opportunities.
- Urbanization to be one of the major theme of Rio+20

Urbanization and Buildings in Africa needs to be part of the agreement and to be in the forefront

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