WORLD SB14 BARCELONA
October 28/30th 2014

Building a common home

A Global Vision report

Building a common home
Building sector. A Global Vision report

Are we moving as quickly as we should?

September 2014, Version 0.2

Authors:

Albert Cuchí, coordinator
Joaquim Arcas-Abella
Marina Casals-Tres
Gala Fombella

Editorial board:

Antonio Lucio
Emilio M.Mitre

Graphics and design:

Dolores Huerta
Gala Fombella

Produced by the Global Vision Area within the World SB14 Barcelona Conference.

This report and the methodological notes, can be found and downloaded at
http://wsb14barcelona.org/downloads/global-vision-report.pdf

Introduction

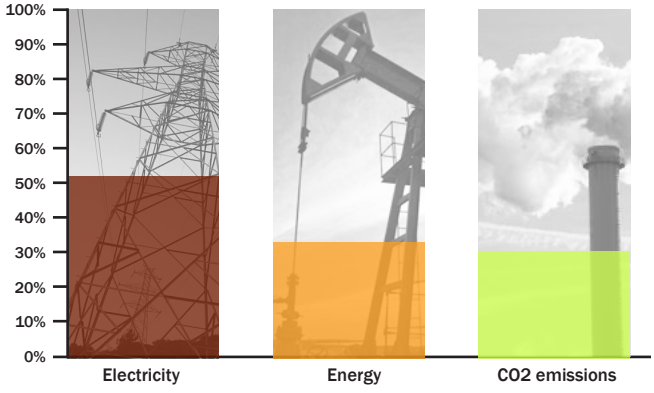
This document is the frontpage of the WSB14 Barcelona Conference, that wants to present before all - those responsible for global policies, sector stakeholders, the public in general - the need for a Global Vision for the building sector, and propose actions that could lead to define it properly.

A Global Vision that allows the building sector to be prepared to tackle the major global environmental challenges - such as climate change, biodiversity loss, the energy crisis - and doing so in responding to the needs of habitability of the world's population and creating a sector capable of generating economic development in those populations that need a way out of poverty.

This report does not pretend to make an exhaustive analysis of the building sector challenges – global or local – nor to offer solutions or strategies to face them - beyond what the consulted studies carried out by a number of global organisations provide. It only intends to present some of these environmental and social challenges – primarily climate change and habitability needs –, both to start building a Global Vision, and to kick start the necessary debate that must help to establish it.

To do this, we have collected information available from different international organisations which analyse, in various documents, the situation and, from the visions that they promote, make proposals to understand and overcome the present situation, and the perilous way it is evolving towards the future. These organisations' views are logically committed to their core values, as well as inevitably partial, making other views and objectives welcome and necessary in the debate that must now be opened.

Figure 1 Perfentages of electricity, energy consumption and CO2 emissions generated in the building sector (World, 2010)



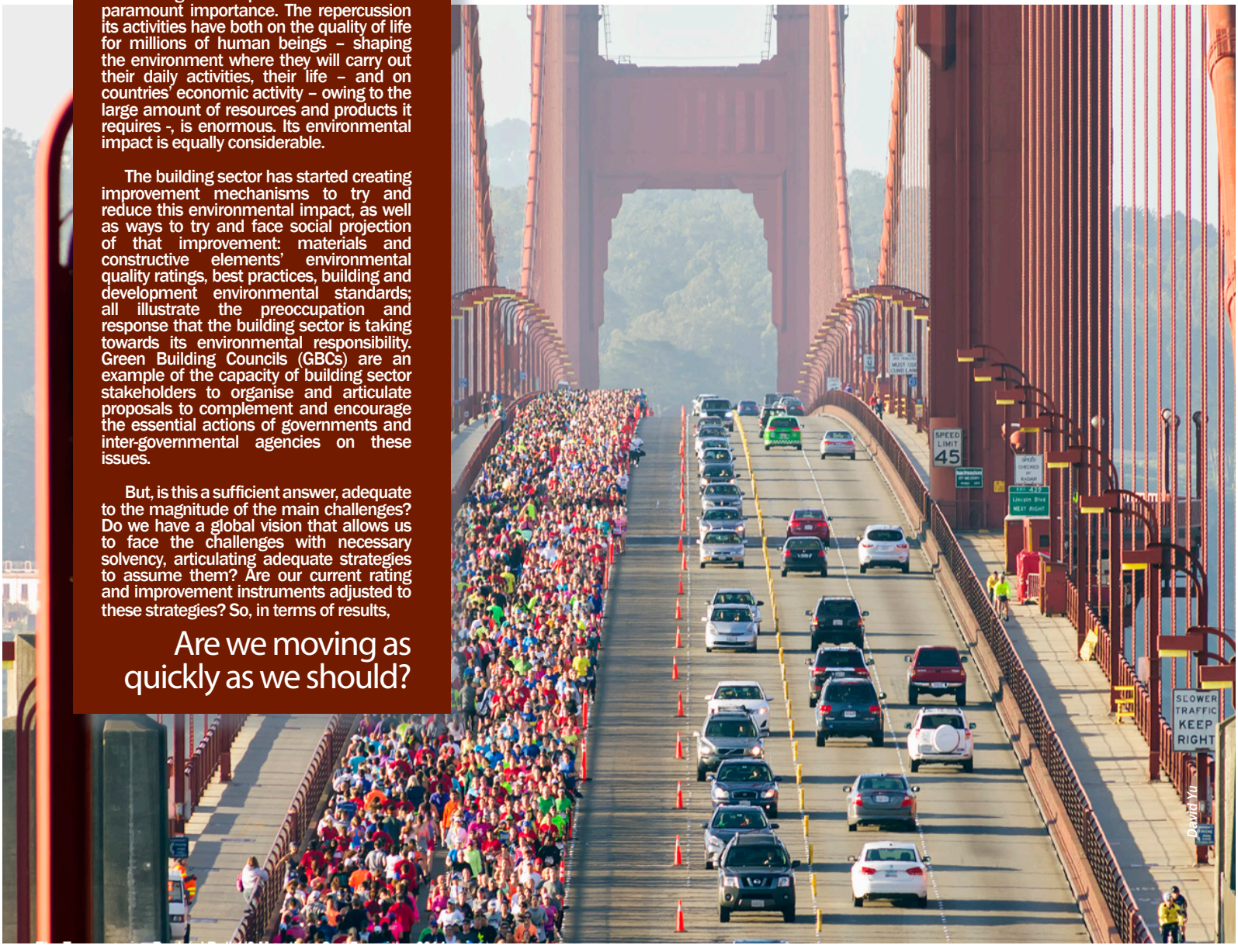
Source: IPCC, 2014

Building is a productive sector of paramount importance. The repercussion its activities have both on the quality of life for millions of human beings – shaping the environment where they will carry out their daily activities, their life – and on countries' economic activity – owing to the large amount of resources and products it requires -, is enormous. Its environmental impact is equally considerable.

The building sector has started creating improvement mechanisms to try and reduce this environmental impact, as well as ways to try and face social projection of that improvement: materials and constructive elements' environmental quality ratings, best practices, building and development environmental standards; all illustrate the preoccupation and response that the building sector is taking towards its environmental responsibility. Green Building Councils (GBCs) are an example of the capacity of building sector stakeholders to organise and articulate proposals to complement and encourage the essential actions of governments and inter-governmental agencies on these issues.

But, is this a sufficient answer, adequate to the magnitude of the main challenges? Do we have a global vision that allows us to face the challenges with necessary solvency, articulating adequate strategies to assume them? Are our current rating and improvement instruments adjusted to these strategies? So, in terms of results,

Are we moving as quickly as we should?



The building sector addresses the social demand for habitability in different socio-economic, cultural and environmental contexts … does it really solve it?

The business model of the building sector is to provide, at a price, a shelter for our social activities, doing so in very different economic, social and environmental frameworks and, very often, extraordinarily changeable, including the building sector as a relevant driver of change itself.

The building sector has organised itself to resolve different situations and, therefore, has adapted to local conditions brilliantly. This adaptation to local conditions appears as something natural, even when confronting global environmental topics.

world population growth, an important decisive challenge

the conditions where this growth will happen– in which countries, which regions – and in what economic and social conditions

environmental limitations which will determine the reply that the sector gives to these challenges

In less than 40 years (2013-2050), world population will grow from 7,200 to 9,600 million inhabitants. An increase equivalent to adding up the population of India and China

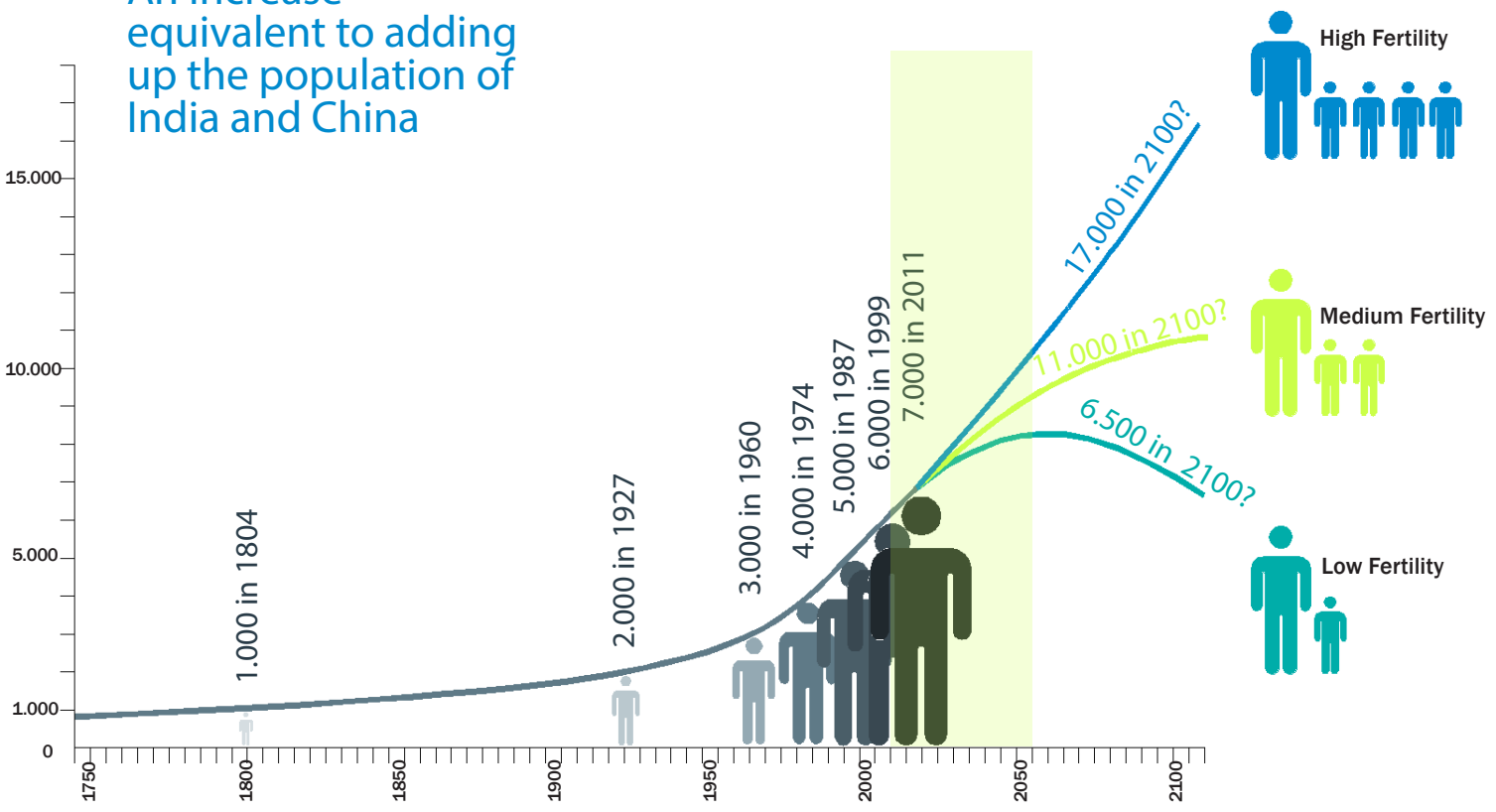


Figure 2 Evolution of world population (World, 1750-2100)

Units: Millions of people
Sources: Elaborated with Report authors on the base of DESA (1999); DESA (2013)

Agustín Canosa

Population growth has come closer to an exponential tendency as advances from the industrial revolution have made production increase possible, breaking the boundaries that constrain traditional settlements.

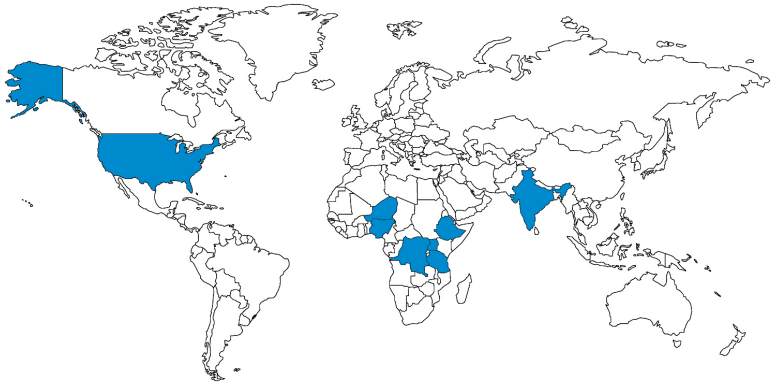
Since the Earth's population reached 1 billion, during the first years of the 19th century, after keeping close to 700 million in the pre-industrial era, Humanity needed little more than one century (1920) to reach 2 billion, barely 40 years (1960) to reach 3 billion, only 15 years (1975) to hit 4 billion. It took little more than 10 years for world population to be over 5 billion inhabitants. In 2012 we reached 7 billion, after entering the second millennium with 6 billion human beings on the planet.

The coming decades will prove decisive to know if constraints to population growth – increases in income, education, etc. – will stabilise levels towards the end of the 21st century around 10,000 million inhabitants, or if they will prove insufficient to avoid a progressive increase in population. But, in any case, the main challenge of the first half of this century is to provide decent housing to over 9 billion people before 2050.

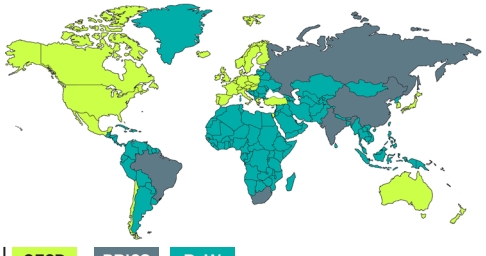
Population growth is going to happen in developing countries

Developing countries will contribute nearly the total population increase.

50% of population increment will happen in barely 8 countries, 6 of them in Africa: Nigeria, Tanzania, Congo, Niger, Uganda, Ethiopia, India and...USA.



50% of world population increment will happen in 8 countries



World regions clasification

Table 1 Population, proportion of urban population and per capita income (World and regions, 2000-2050)

		2000	2010	2020	2030	2040	2050	
OECD	Population	1.156.140	1.242.081	1.312.416	1.366.554	1.402.974	1.425.357	(a)
	% Urban	75,6%	79,4%	82,1%	84,2%	85,9%	87,4%	
	GDP per capita	24.775	33.320	39.913	46.850	55.158	64.944	(b)
BRICS	Population	2.688.804	2.955.727	3.192.417	3.344.075	3.418.353	3.420.449	(a)
	% Urban	38,0%	45,3%	52,0%*	57,2%	61,4%	65,6%	
	GDP per capita	2.692	6.719	11.929	17.726	25.851	34.957	(b)
RoW	Population	2.282.756	2.718.376	3.211.916	3.714.309	4.217.360	4.705.139	(a)
	% Urban	42,4%	45,8%	49,4%	53,4%	57,7%	62,1%	
	GDP per capita	2.914	4.816	6.495	7.775	9.612	12.417	(b)
World	Population	6.127.700	6.916.183	7.716.749	8.424.937	9.038.687	9.550.945	(a)
	% Urban	46,7%	51,6%*	56,0%	59,9%	63,5%	67,2%	
	GDP per capita	6.918	10.608	14.293	17.922	22.711	28.264	(b)

Units: (a) Thousand people. (b) Gross domestic product based on purchasing-power-parity (PPP) per capita GDP. Current international dollar

Notes: Medium fertility population projectiont *Urban population is bigger that rura population

Sources: Elaborated by Report authors on the base of IEA (2013a); DESA (2012a); DESA (2013); IMF (2013)

With an increase in income

Half of the global population will have a higher per capita income than current income in OECD countries.

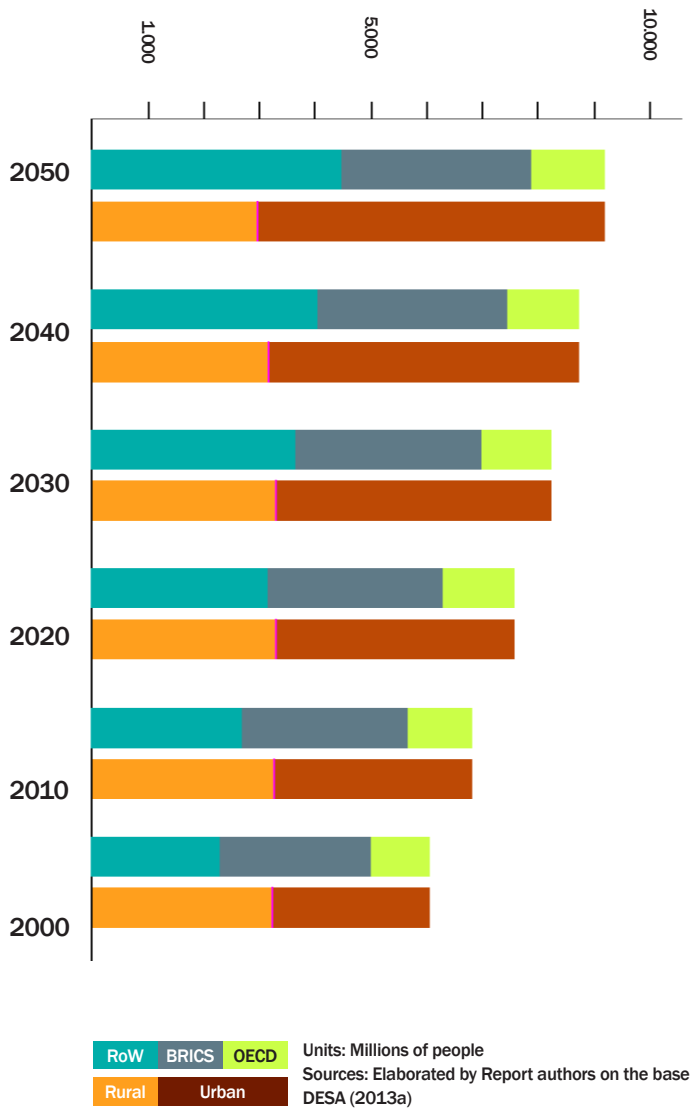
Even though the highest absolute income increase will occur in OECD countries, BRIC nations (Brasil, Russia, India, China and South Africa) will multiply their GDP per capita by 13. On average, this factor will quadruple in the rest of the countries.

And in cities

The whole population increase will happen in cities.

More than half of the global population already lives in cities. But future growth will almosts exclusively happen in urban environments: by 2050, there will be more people living in cities than there were living on the whole planet at the beginning of this century.

Figure 3 Evolution of population 2000-2050 (World and regions/ Urban and rural)



Units: Millions of people
Sources: Elaborated by Report authors on the base of DESA (2013a)

Growing population demands habitability: new homes and non-residential buildings

… in renewed social and productive conditions, and supported by acceptable social models

An increase in population will mean going from nearly 1,900 million homes in 2010 to nearly 3,200 million in 2050.

This will require an increase in housing stock from 160,000 million m2 to nearly 300,000 million m2.

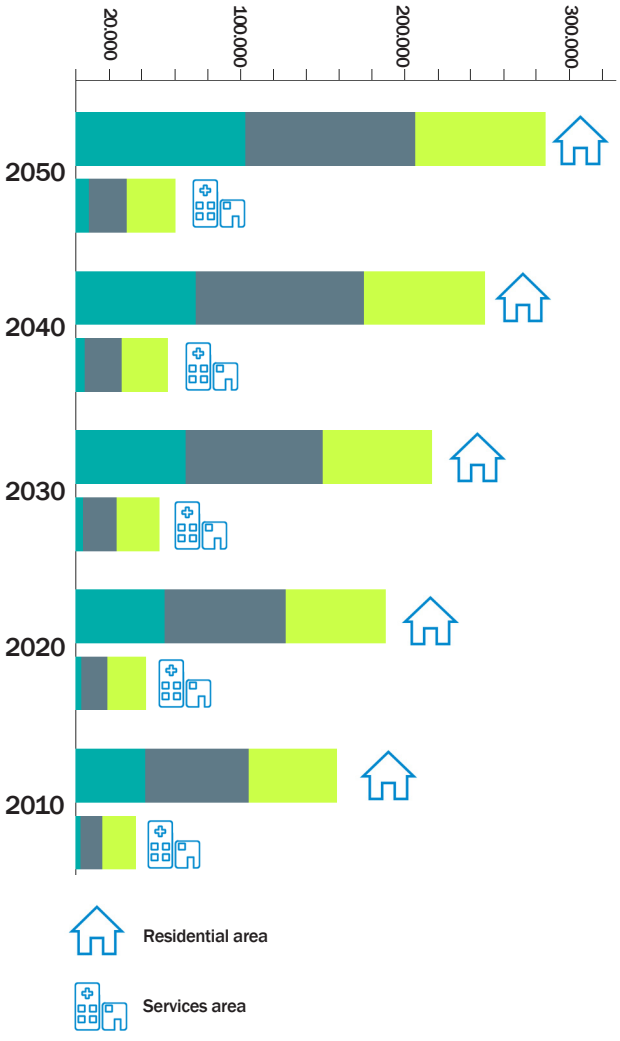
Likewise, demand for service buildings – non-residential – will entail growth equivalent to nearly 70% of current area –nearly 38,000 million m2. Approximately half of this growth will occur in BRIC countries.

This new habitability is expected to produce homes with less dwellers.

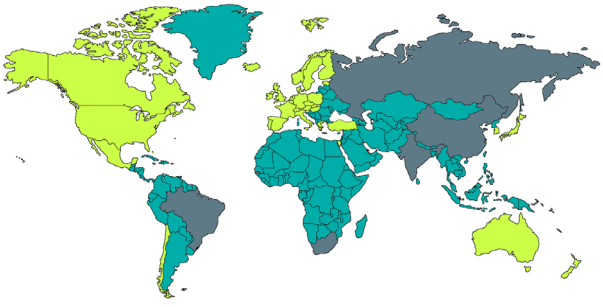
– from 3.7 persons per home in 2010 to 3 persons per home in 2050 - but larger – from 23m2/dweller in 2010 to 30m2/ dweller in 2050 – and with better service quality.

Built areas will also increase, from 5,4 m2 to 6,6 m2 per capita, in order to cover the needs of a progressing society.

m2 **Fig ure 4** Evolution of the residential and services area (World and regions, 2010-2050)



Units: Millon m2
Sources: Elaborated by Report authors on the base of IEA (2013)



World regions clasification

Table 2 Evolution of habitability demand (World and regions, 2010 and 2050)

		Building sector 2010	Building sector 2050 6DS		Residential sub-sector 2010	Residential sub-sector 2050 6DS	Services sub-sector 2010	Services sub-sector 2050 6DS	
OECD	Households	474	608	Area	54.526	80.627	20.910	30.560	(a)
	Persons per household	2,6	2,3	Area/per	44,3	57,6	17,0	21,8	(b)
BRICS	Households	757	1.146	Area	62.928	104.035	13.399	24.006	(a)
	Persons per household	3,8	3,0	Area/per	21,7	30,7	4,6	7,1	(b)
RoW	Households	655	1.405	Area	43.081	103.721	3.324	7.948	(a)
	Persons per household	4,4	3,3	Area/per	15,0	22,3	1,2	1,7	(b)
World	Households	1.886	3.159	Area	160.535	288.383	37.633	62.514	(a)
	Persons per household	3,7	3,0	Area/per	22,9	30,5	5,4	6,6	(b)

Units: (2013a) Household units; million m2. (b) Persons/household; m2/person

Note: 6DS and 2DS are different scenarios defined by IEA
Elaborated by Report authors on the base of IEA (2013a)

Timquijano (Flikr user)

In order to create and maintain this habitability, the building sector's need for resources will swell dramatically

New resources will be needed to construct the buildings that will, in turn, satisfy the need for habitability.

Modern construction direct building materials demand is close to 2T/m². Emissions produced during their manufacturing process rise to approximately 0.5 tonnes of CO2/m2.

A strong increase in built-up area will entail a large increase in the demand for building materials, energy, and the emissions produced in the manufacturing process.

	2010		2050
m²	built-up area	x1,76	m²
	energy	x1,49	
CO_2	emissions	x1,40	CO_2
	population	x1,35	

On the other hand, resources will be needed to carry out activities within the buildings.

Energy consumption in buildings would increase by 50% between 2010 and 2050, and 80% of this increase would occur in non OECD nations. In these countries, even though approximately 70% of this increase would be related to housing, energy consumed in service buildings could treble.

CO2 emissions connected to such an increase in energy consumption would entail reaching 40% more GHG emissions during building use.

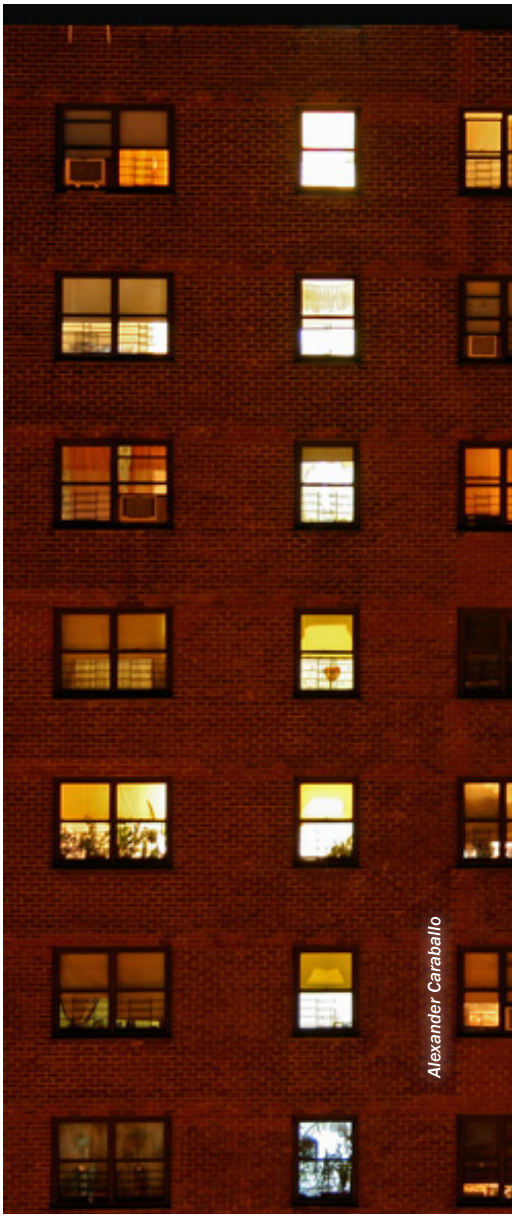

Alexander Caraballo

Table 3 Building sector final energy consumption evolution (World and regions, 2010 and 2050)

		Building sector		Residential sub-sector		Services sub-sector	
		2010	2050 6DS	2010	2050 6DS	2010	2050 6DS
OECD	Final energy	51,3	62,4	30,7	35,2	20,6	27,2
BRICS	Final energy	34,0	53,7	28,4	37,7	5,6	15,9
RoW	Final energy	31,7	57,3	27,6	46,0	4,1	11,4
World	Final energy	116,9	173,4	86,8	118,9	30,2	54,5

Units: EJ/year
Note: 6DS and 2DS are different scenarios defined by IEA
Sources: Elaborated by Report authors on the base of IEA (2013a)

But today there are strong global environmental limits to resource availability

Climate change produced by man-made GHG emissions

Climate change mitigation is one of the determining challenges, key to our society's future. The latest IPCC Report 2014 shows us, once again, the urgent need to act, offering 4 reference scenarios – including actions and economic costs – related to different transformation speeds of our productive model, towards a less emitting one.

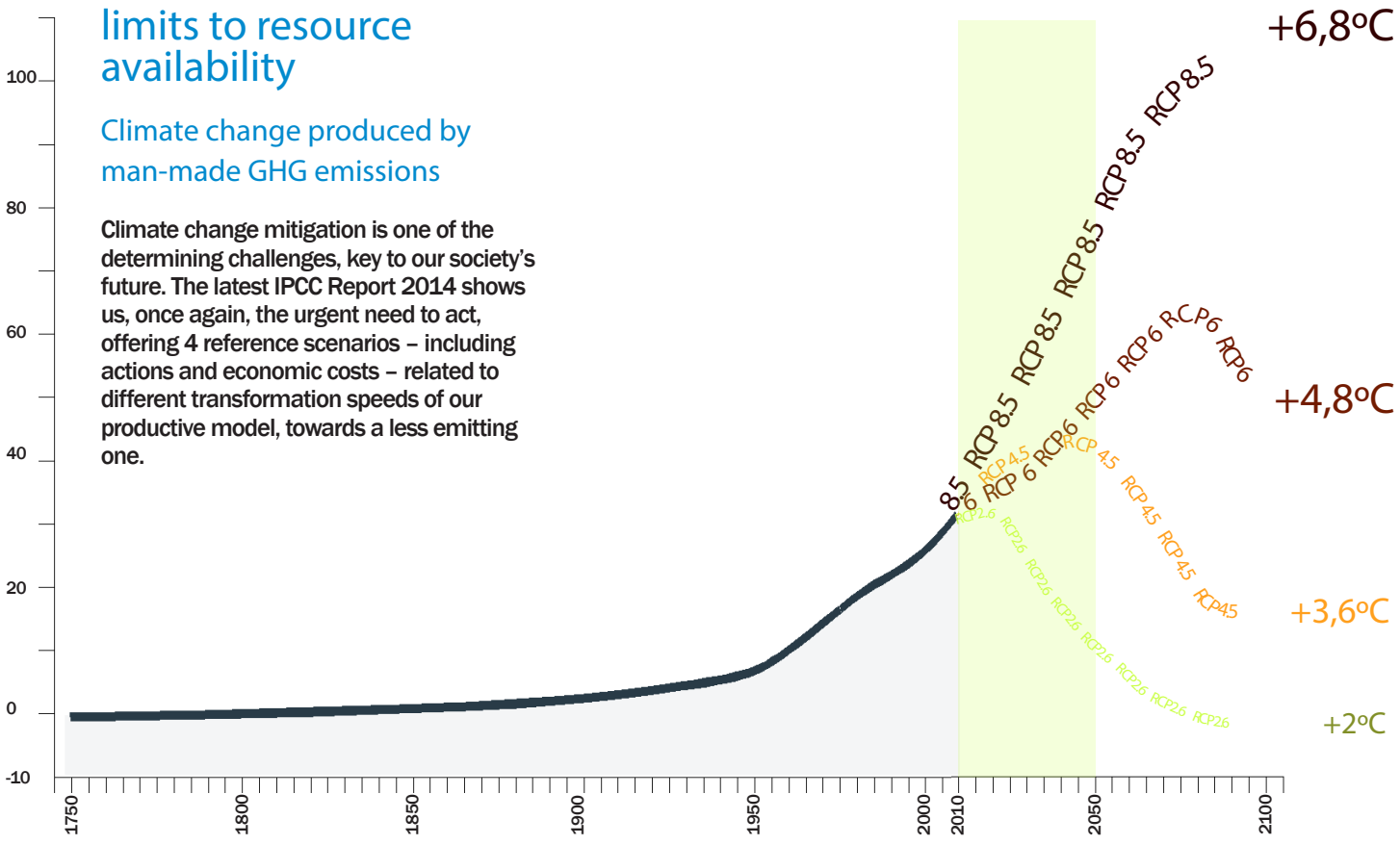


Figure 5 Evolution of annual world CO2 emissions (World, 1750-2100)

RCP 8.5, RCP 6, RCP 4.5 y RCP 2.6 are different scenarios defined by IPCC
Units: GtCO2/year
Sources: Elaborated by Report authors on the base of CDIAC (2010); IPCC (2014)

And also important local limitations: water, land, biodiversity

Decreasing availability of energy resources

Concurrently with the climate crisis, we are also suffering a deep crisis centred on the availability of energy resources, key elements in the development of our industrial model.

Oil, which today comprises more than one third of primary energy consumed by Humanity, has reached its peak production. Therefore, its availability is decreasing progressively, as M. King Hubbert predicted in the 1950s announcing "peak oil" at the turn of the century.

Figure 6 Evolution of crude-oil production according to Hubbert (World, 1850-2200)

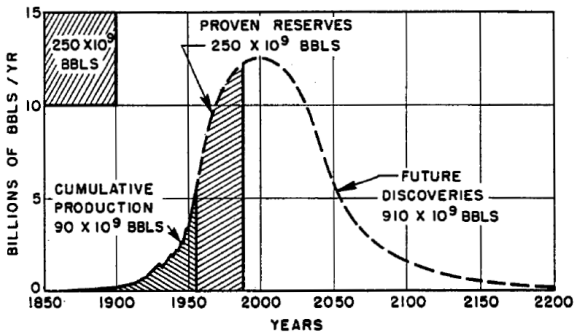


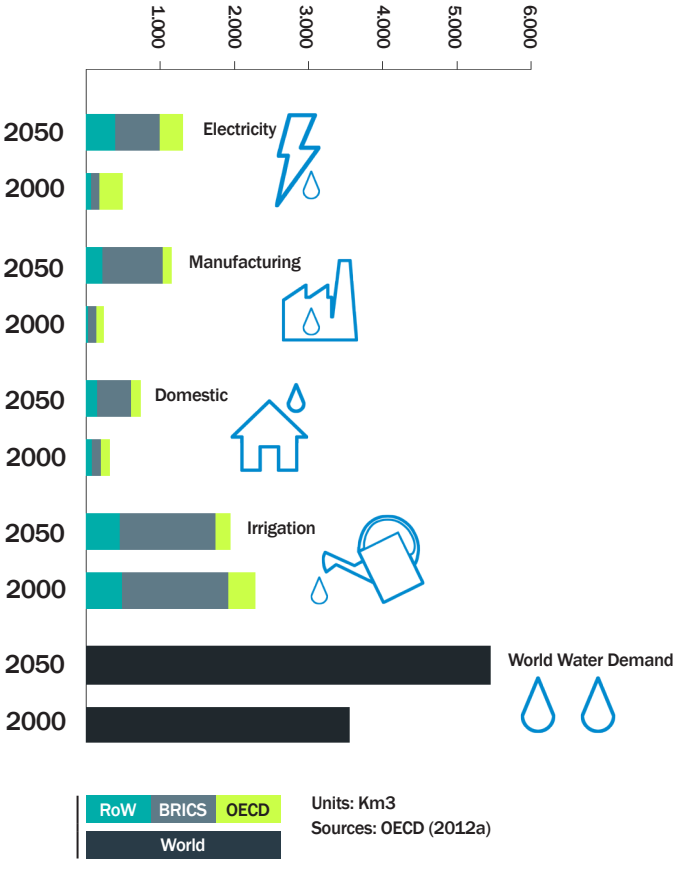
Figure 20 – Ultimate world crude-oil production based upon initial reserves of 1250 billion barrels.

Source: Hubbert (1956)

And building brings important local impacts

Demand for materials, construction processes, and urbanisation and local demand for resources to be used in buildings, result in important alterations to surrounding landscape, resources and ecosystems.

Figure 7 Evolution of world water demand (World and regions, 2000 and 2050)



Following current tendencies, by 2050 the building sector alone will be responsible for all the global emissions that the 2ºC increase scenario allows.

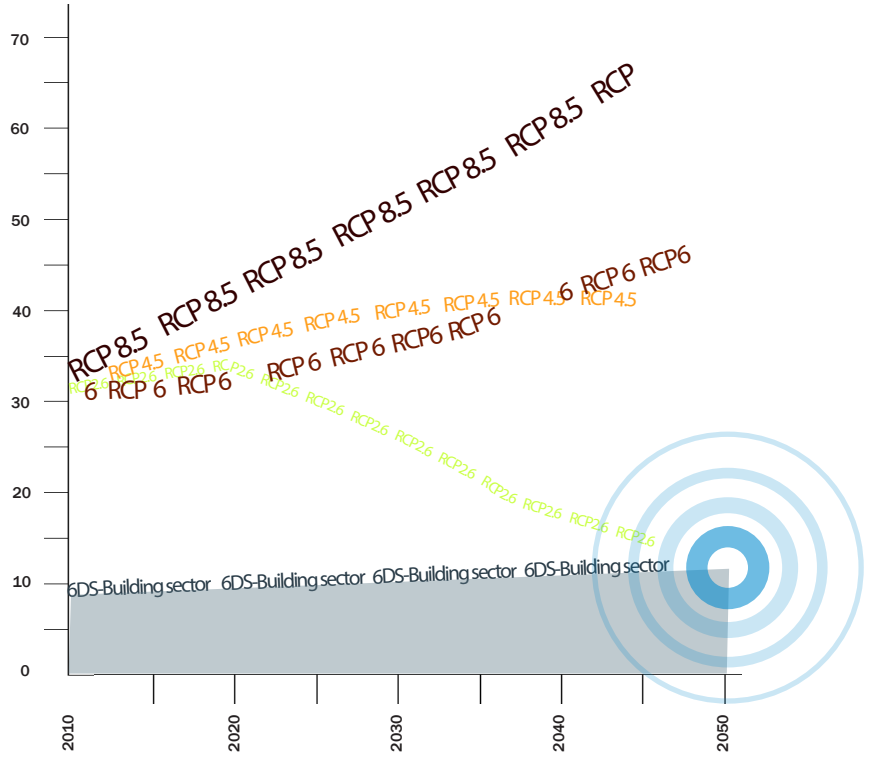
It is impossible to reach desirable climate change scenarios with the current building sector

If, by 2050, building energy demand is satisfied following current tendencies, marked by the building sector's present situation, this sector will produce all the GHG global emissions that the IPCC report considers would result in the 2ºC increase scenario in average Earth temperature since pre-industrial times.

Solving the habitability necessities that the population growth until 2050 will demand requires a deep transformation of the building sector, accompanied by a global change in our whole productive system.

Darren Harmon

Figure 8 Evolution of annual global and building sector CO2 emissions (World, 2010-2050)



6DS and 2DS are different scenarios defined by IEA
Units: GtCO2/year
Sources: Elaborated by Report authors on the base of IEA (2013a); IPCC (2014)

There are global plans to reach desirable reduced emission scenarios

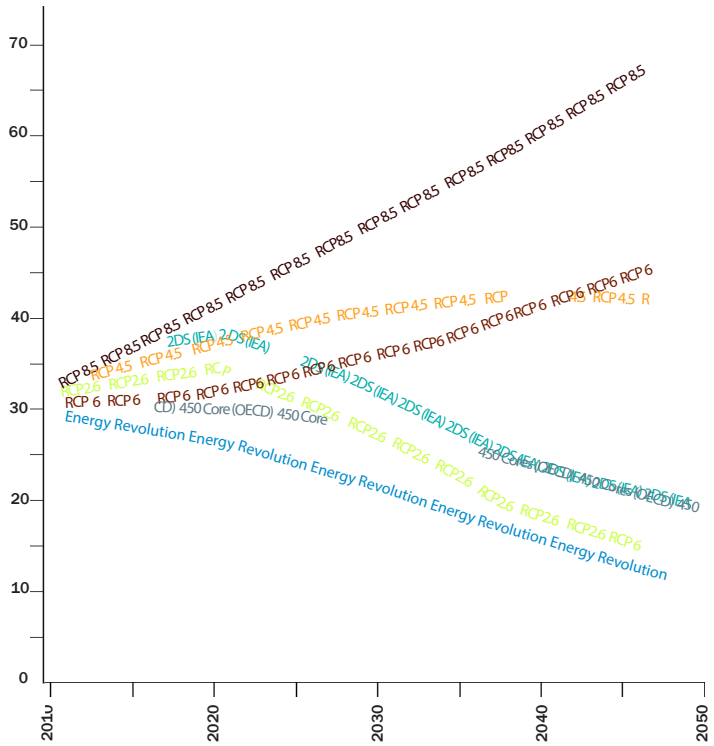
Several institutions have action plans that would allow society to reach the IPCC 2ºC temperature increase scenario

The International Energy Agency, the OECD, Greenpeace (among others), present options to change the global energy model, aiming to achieve an environmentally, economically and socially viable system.

Table 4 Comparative chart between different international organisations' scenarios

		Global mean temperature	CO2-eq concentration	Radiative forcing
IPCC. AR5	RCP 8.5	6,8	1.370	8,5
	RCP 6	4,8	860	6,0
	RCP 4.5	3,6	650	4,5
	RCP 2.6	2,1	455	2,6
IEA. ETP 2014	6DS	6,0	1.100	
	4DS	4,0	710	
	2DS	2,0	450	
IEA. WEO 2013	Current policy scenario	5,3	950	
	New policy scenario	3,6	660	
	450 scenario	2,0	450	
OECD Environmental Outlook to 2050	Baseline scenario	3,7-5,6	1.000,0	
	450 Core scenario	2,0	450,0	
Greenpeace. E[R]	Reference scenario	6,0	1.000,0	
	Energy [R]evolution Scenario	2,0		
Units:	EJ/year			
Sources:	Elaborated by Report authors on the base of Greenpeace (2010); OECD (2012); IEA (2013b); IEA (2014a); IPCC (2014)			

Figure 9 Evolution of global annual CO2 emissions according to different international organisations (World, 2010-2050)



Units: GtCO2/year
Sources: Elaborated by Report authors on the base of Greenpeace (2010); OECD (2012a); IEA (2014a); IPCC (2014)

By means of two main strategies:

energy efficiency

As the main energy resource of the change towards the new model. Improving efficiency in the use of energy in all sectors is possible if we use the technologies currently available, as well as by increasing efficiency on all scales.

a change in our energy sources

Decarbonising our current energy "diet", abandoning fuels – from coal to natural gas – that pollute more than renewables and redirecting the energy production towards these– which must reach at least 50% of energy production between 2010 and 2050 – and other non-emitting sources, should allow important achievements, such as reducing electric production related emissions from 600 grsCO2/ kWh in 2009 to less than 60 grsCO2/kWh in 2050.

Table 5 Evolution of energy consumption according to different sources

	2010	2050 6DS	Dif. 2010-6DS	2050 2DS	Dif. 2010-2DS	Dif. 6DS-2DS
Fossil fuels	429,7	726,9	169%	294,3	68%	40%
Oil	170,1	251,6	148%	110,0	65%	44%
Coal	148,1	242,8	164%	72,9	49%	30%
Natural gas	111,5	232,4	208%	111,4	100%	48%
Nuclear	28,8	35,3	123%	74,0	257%	209%
Renewables	70,3	166,5	237%	312,3	444%	188%
Hydro	12,1	22,0	181%	25,9	213%	118%
Biomass and waste	53,4	104,8	196%	163,8	307%	156%
Other renewables	4,8	39,8	830%	122,6	2560%	309%
Total	528,8	928,7	176%	680,6	129%	73%

Units: EJ/year

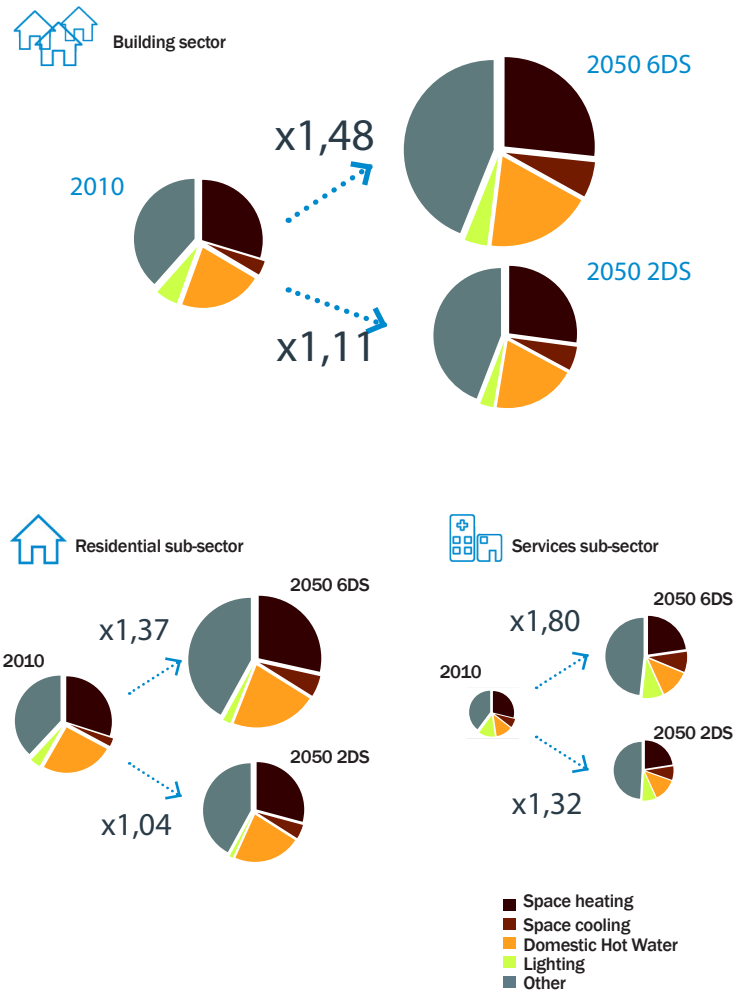
Sources: Elaborated by Report authors on the base of IEA (2012a); IEA (2014)

The building sector must cooperate towards global transformation by reducing its environmental demands down to a minimum increase of a bare 11%

Energy demand should be cut down as much as possible in order to face new habitability requirements

The sector's necessary growth could be resolved without barely increasing energy consumption: in contrast to a 50% increase in the demand for energy needed to use buildings that current tendencies show for the period between 2010 and 2050, it is possible to bring that consumption down

Figure 10 Evolution of final energy consumption in the building sector according to energy usage



Units: EJ/year
Sources: Elaborated by Report authors on the base of IEA (2013)
Note: 6DS and 2DS are different scenarios defined by IEA

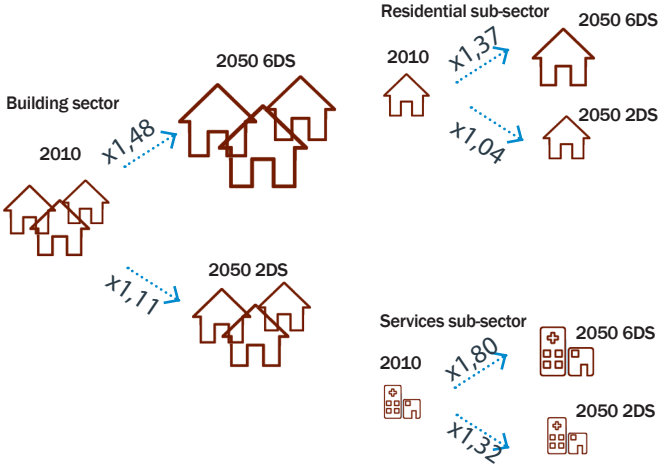
Improving energy efficiency

It is also necessary to increase energy efficiency in all the energy usages of the building

Improving energy efficiency in all those aspects that have an incidence on energy consumption could reduce housing energy demand by 24%, and 27% in non-residential buildings, as compared to the consumption that these buildings would have following current tendencies.

Adopting optimum urban and building design, taking advantage of local knowledge and opportunities, adapting to social circumstances in each location, as well as continuous improvement of energy systems efficiency, are some among the many possibilities to integrate energy efficiency in building.

Figure 11 Evolution of final energy consumption in the building sector, residential sub-sector and non-residential sub-sector



Changing energy sources

It is necessary to boost the use of energy from renewable sources to satisfy the building sector's demand

Substituting fossil fuels for renewables is a two-fold:

-on one hand, because, in buildings, thermal energy is required mainly at a low temperature, helping the use of renewables and consequent adaptation of local conditions and opportunities;

-on the other hand, electricity from renewable sources to be used in buildings can be a powerful vector in the energy model change, so building would help electricity gain a position as the key energy source

Table 6 Evolution of final energy consumption in the building sector according to sources (World, 2010 and 2050)

	Building sector			Residencial sub-sector			Services sub-sector		
	2010	2050 6DS	2050 2DS	2010	2050 6DS	2050 2DS	2010	2050 6DS	2050 2DS
Fossil fuels	43,0	56,8	31,9	29,9		21,4	13,1		10,5
Oil	4,4	2,7	0,5	3,3		0,1	1,1		0,4
Coal	13,1	14,0	4,1	8,8		2,8	4,3		1,3
Natural gas	25,5	40,1	27,3	17,7		18,5	7,8		8,9
Electricity and commercial heat	38,4	73,8	62,2	22,2		39,0	16,3		23,3
Electricity	32,7	66,4	55,5	17,8		34,0	14,9		21,6
Commercial heat	5,7	7,5	6,7	4,3		5,0	1,4		1,7
Renewables	35,4	42,8	36,0	34,6		30,0	0,8		6,1
Total	116,9	173,4	130,1	86,7	118,9	90,4	30,2	54,5	39,9

Units: EJ/year

Sources: Elaborated by Report authors from IEA (2013a); IEA (2014a)

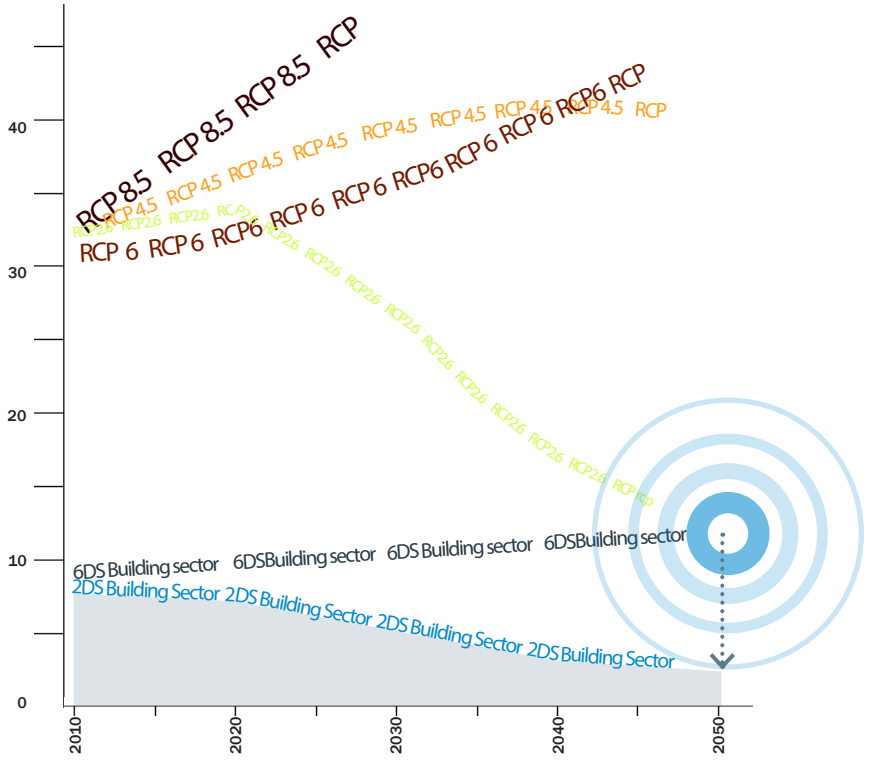
In 2050, building sector emissions could be brought down to 23% of the emissions that the 2ºC increase scenario predicts for that year

The building sector must reduce its emissions' share significantly

Emissions derived from energy use in buildings could be reduced to reach less than the current (2010) 26% of total annual global emissions, thus contributing to climate change mitigation, based on low temperature increase scenarios.

Seier+Seier+Seier

Figure 12 Evolution of annual global and building sector CO_2 emissions in different scenarios (World, 2010-2050)



Units: GtCO2/year
Sources: : Elaborated by Report authors on the base of IEA (2013a); IPCC (2014)
Note: 6DS and 2DS are different scenarios defined by IEA. RCP is a scenario defined by the IPCC report

But environmental targets must be redefined continuously…

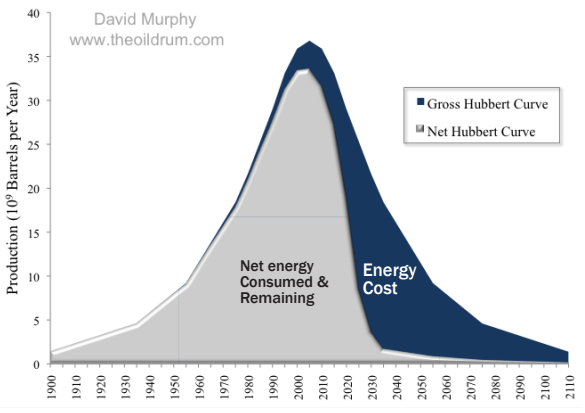
Some doubts and discussions over certain aspects, which must be taken into account when considering scenarios and their future evolution, persist.

Some of these are presented here:

The EROI (Energy Return On Investment) rate may condition, in a determining way, the energy model change

Just as "peak-oil" reflects the need to increase the quantity of fuel destined to obtain each new barrel of the existing reserves, creating new renewable infrastructures entails destining some of that "growingly scarce" energy to build them and waiting some years until their production returns that energy. This could lead us to an insurmountable "energy-trap" hampering a change in the energy model if we don't act soon.

CO_2 Figure 13 Evolution of production of crude-oil according to Hubbert and according to Murphy (World, 1900-2100); Murphy, D (2009)



Nuclear dependency

Some of these scenarios – such as those presented by the IEA, frequently used as a reference for this report – propose multiplying the nuclear energy production capacity by 2,5 between 2010 and 2050. There is an important debate regarding the role that this energy source should have in a post-carbon energy model, owing both to operation risks and hazardous waste generation.

GDP evolution related to its energy support

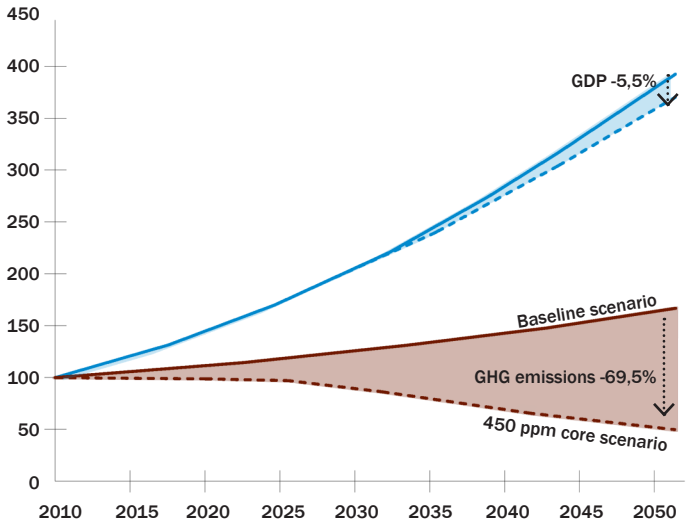
Most reference studies decouple GDP evolution from a change in the energy model, considering that it will vary very little for all the different climatic change mitigation scenarios. It is also possible that in the end this will not work exactly this way, with a much less homogeneous distribution between regions.

Table 7 Evolution of world primary energy consumption according to sources and scenarios from IEA and Greenpeace (World, 2007, 2010 and2050)

	IEA				Greenpeace			
	2010	%	2050	%	2007	%	2050	%
World			2DS				E[R]	
Fossil fuels	429,7	81%	294,3	43%	396,7	81%	190,8	31%
Oil	170,1	32%	110,0	16%	155,9	32%	81,8	13%
Coal	148,1	28%	72,9	11%	135,9	28%	37,6	6%
Natural gas	111,5	21%	111,4	16%	104,8	21%	71,4	12%
Nuclear	28,8	5%	74,0	11%	29,7	6%	0,0	0%
Renewables	70,3	13%	312,3	46%	63,9	13%	428,4	69%
Hydro	12,1	2%	25,9	4%	11,1	2%	90,9	15%
Biomass and waste	53,4	10%	163,8	24%	49,8	10%	18,2	3%
Other renewables	4,8	1%	122,6	18%	3,0	1%	159,6	26%
Wind					0,6		30,5	
Solar					0,4		76,5	
Geothermal					2,0		50,1	
Ocean Energy					0,0		2,4	
Total	528,8	100%	680,6	100%	490,2	100%	619,1	100%

Units: EJ/year
Sources: Elaborated by Report authors on the base of IEA (2012a); IEA (2014a); Greenpeace (2010)

Figure 14 Evolution of world CO2 emissions in two scenarios and economic mitigation costs (World, 2010-2050)



Units: Index 2010 = 1
Sources: OECD (2012a)

...and the new limits that these environmental objectives pose before the building sector must be redefined

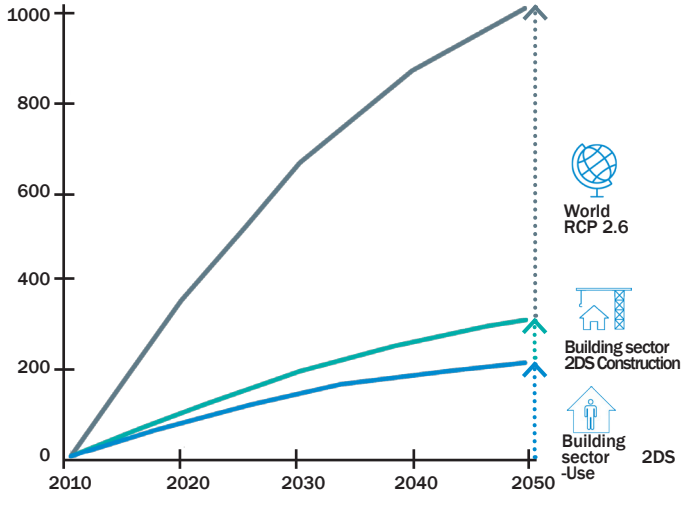
Some considerations that enlarge and characterise the evolution the building sector must face in the future:

Embodied energy in construction materials

The building sector does not only demand energy to be used in buildings holding social activities. Manufacturing materials with which buildings are constructed implies using energy and generating emissions, amounting to a significant quantity.

Even though, usually, the industrial sector is made responsible for that energy and those emissions, the building sector must be widely considered as the sector that produces and maintains socially required habitability and, as a consequence, cannot avoid those demands in its future strategies

CO_2 **Figure 15** Evolution of cumulative world CO2 emissions and in the building sector, use and construction phases (World, 2012-2050)



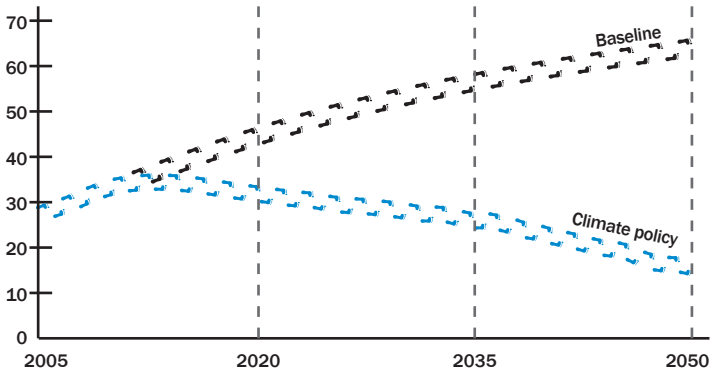
Units: GtCO2
Sources: Elaborated by Report authors on the base of GBCe (2010); IEA (2013a); IPCC (2014)

A definitely urban sector

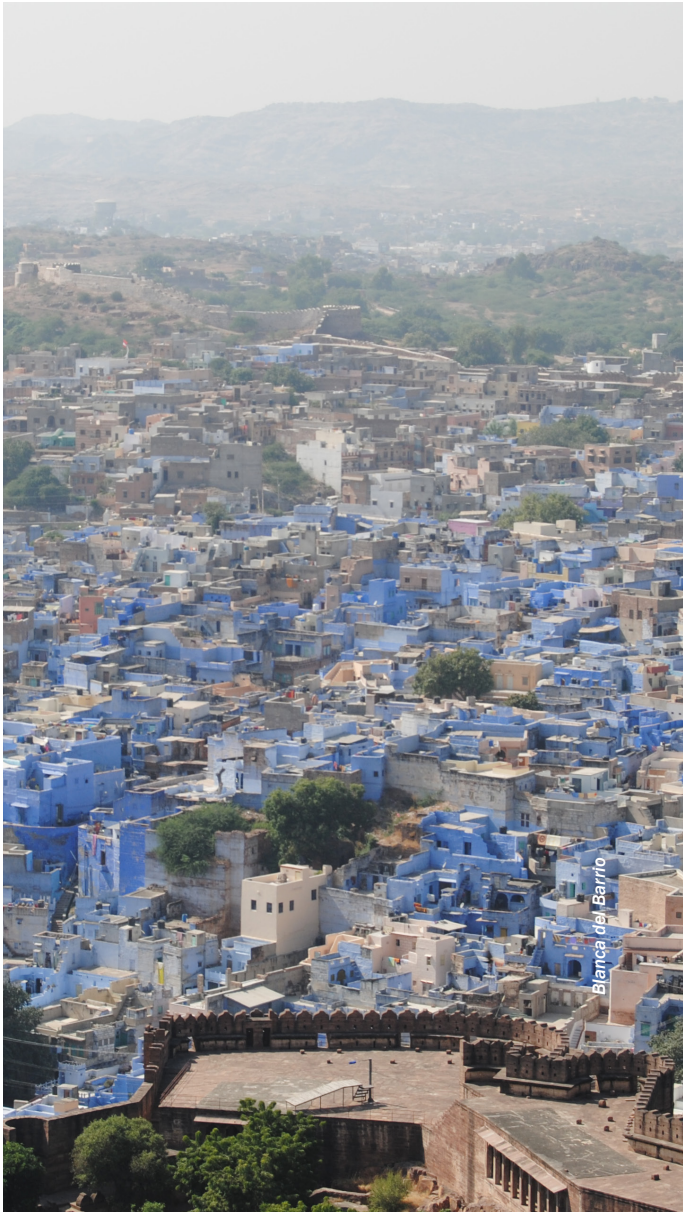
The future of the sector will happen in, as we have seen previously, an urban environment. This entails considering the role that building and its environmental repercussions will have, according to the different urban models that will structure new construction.

Also, environmental implications from mobility– people, materials, energy - and service models that urban models imply are part of the challenges that building shares with other disciplines.

CO_2 **Figure 16** Evolution of annual world CO2 emissions under baseline and 450 ppm urban climate policy scenario (World, 2010-2050)



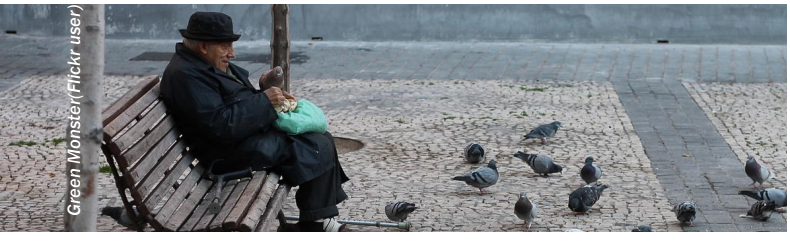
Units: GtCO2/year
Sources: OECD (2010)


Blanca del Barrio


Lorena Pajares


Leecycle (Flickr user)


Green Intruder (Flickr user)


Green Monster(Flickr user)

The building sector has different tasks in different regions

Population growth is basically supported by non OECD countries, while hardly growing at all in most of the wealthiest countries. Furthermore, the largest growth, proportionally, of GDP will happen in BRIC countries.

This leads to different requirements in different areas of the world. In many nations, building restoration is an unavoidable strategy to reduce high energy consumption and associated emissions.

In other areas, slums are a reality that must be overcome. In 2010, more than 10% of world population lived in insalubrious neighbourhoods. And, if poverty is not surmounted, in 2030 it could affect 2,000 million people.

And has different means to answer habitability demands

Providing socially demanded habitability with local and global environmental constraints in mind implies a decisive transformation of the ways and techniques to construct buildings and cities which, owing to globalisation, are currently expanding homogeneously all over the world.

Adapting to varied climatic and social exigencies, as well as to the availability of local resources, will bring not only an important adaptative innovation of these techniques, but also a novel interpretation of the essential lessons that traditional systems and popular architecture have lent us.

The building sector must respond to social evolution

In seven of the eight countries where 50% of the world population increase until 2050 is going to happen – this is, in all of them except USA – more than 70% of the nations' agricultural land is managed by peasants, with very different social, territorial distribution and resource management models compared to the social and productive models of the OECD or of most of the BRIC countries.

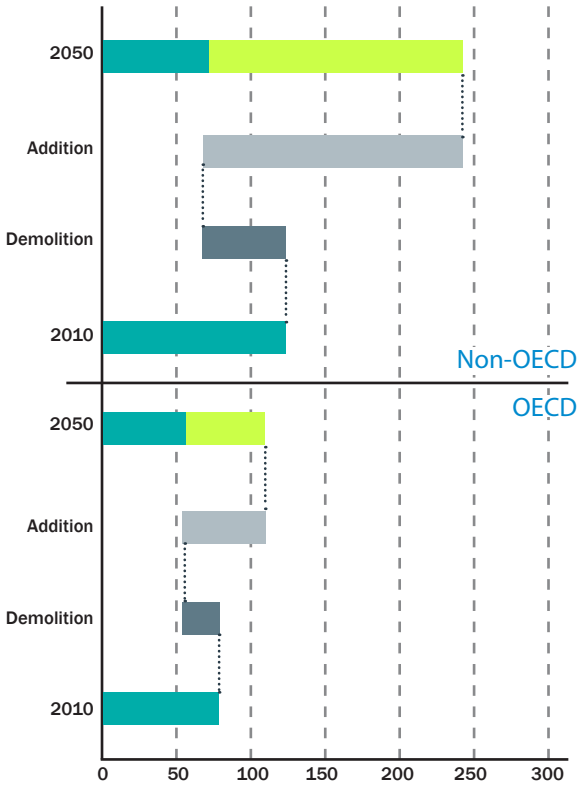
The social and economic changes that will transform these societies can only be acceptable if they result in fairer societies, with a higher life-quality, which will enhance environment biodiversity and productive capacity. The building sector is, owing to its economic relevance, a key element in these changes. Therefore it must be a decisive instrument to make this transformation socially positive.

The building sector as a recipient of investment and generator of jobs

Covering the environmental demands of the building sector between 2010 and 2050 to reach the 2ºC increase scenario would require investing 31 trillion USD ($31*10^{12}$) – 19 for the residential sector, 12 for services – which would be recovered with energy and emission savings.

This investment would have important repercussions on jobs - different in each country or region: in developed economies, an average of 13 jobs/year per 1 million USD invested in implementing mitigation measures in building – which must be strategically considered so as to generate the highest social benefits, seeing to socioeconomic conditions in each particular region.

Figure 17 Evolution of the demolished and new construction areas in the residential sub-sector (Regions, 2010 and 2050



Units: Floor space (billion m2)
Sources: : Elaborated by Report authors on the base of IEA (2013)

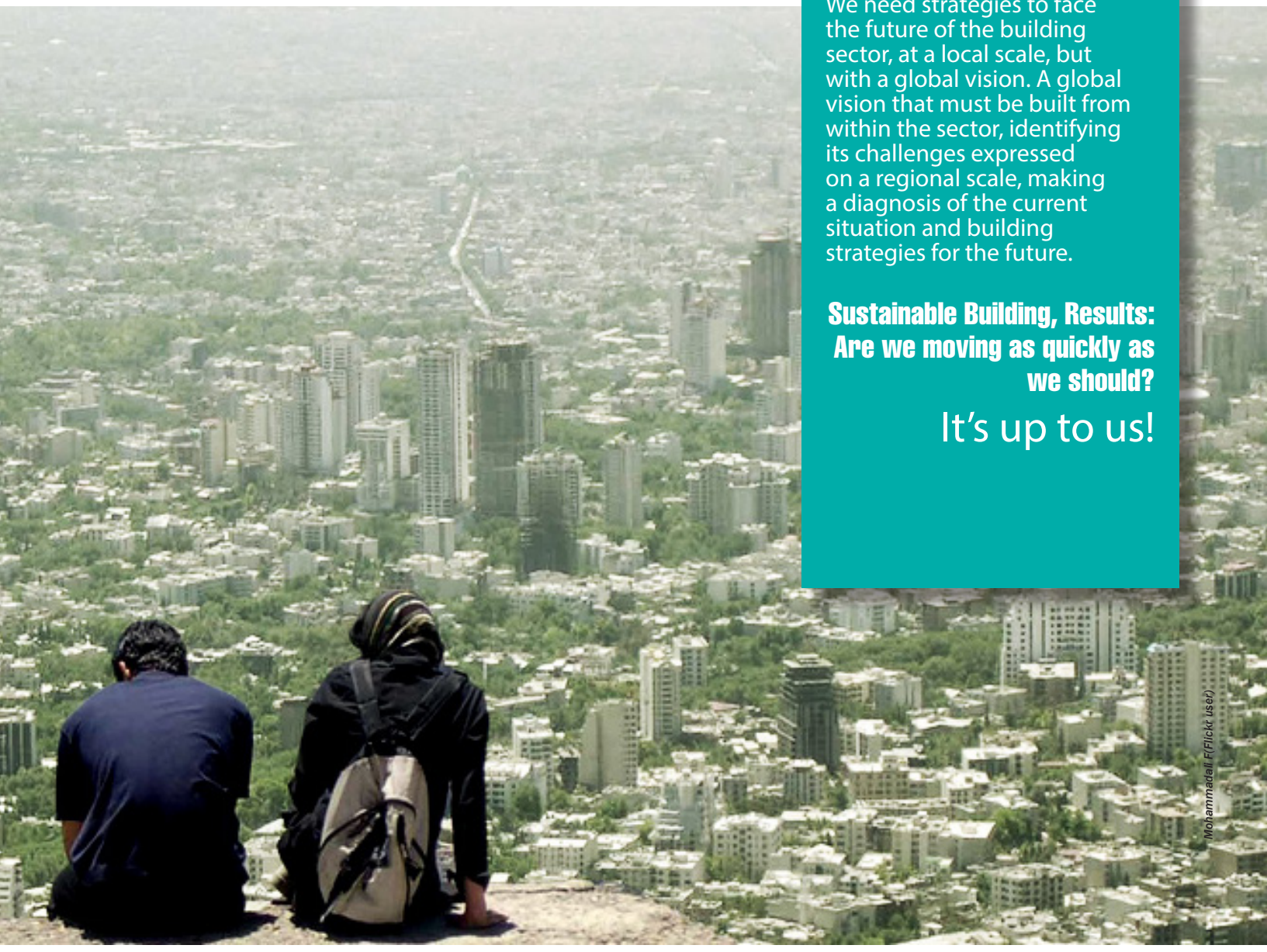
Conclusions

The global environmental situation is critical in some aspects such as climate change, biodiversity loss and energy availability. There are also environmental aspects whose local expression is also very often critical: deterioration of water resources, soil destruction, excessive pressure on renewable resources, etc.

Aware of those crises and their environmental importance, the building sector has started putting in place several actions to face environmental exigencies. But they are actions born to improve current practices, without global goals references. The building sector, crucial to respond to the global challenges, has possibilities to do so, but these need to be incorporated into a global vision that allows designing adequate strategies to face those.

These are important: challenges for the building sector: by 2050, shelter will be needed for more than 9,000 million people, which should be provided by building new cities and renovating existing ones in a framework where solving environmental crises – global and local – will be decisive for world population well-being.

For this reason, specific regional or national strategies need to be designed for the building sector, considering building demands depending on population and society evolution, considering local environmental challenges – pollution, resources – and framed within a global vision that considers global social and environmental challenges. The building sector must enforce these national strategies and coordinate them globally.



Mohammadali F(Flickr user)

We need strategies to face the future of the building sector, at a local scale, but with a global vision. A global vision that must be built from within the sector, identifying its challenges expressed on a regional scale, making a diagnosis of the current situation and building strategies for the future.

Sustainable Building, Results: Are we moving as quickly as we should?

It's up to us!

"Building a common home.
A Global vision report"

June 2014

Produced by the Global Vision Area within the World SB14 Barcelona Conference.

www.wsb14barcelona.org

.This report and the methodological notes, can be found and downloaded at http://wsb14barcelona.org/downloads/global-vision-report.pdf

World SB14 Barcelona Conference is organized by

www.gbce.es