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COMMUNICATION OF CLIMATE CHANGE: HOW THE RISK OF CLIMATE CHANGE IS COMMUNICATED AND WHAT WE CAN DO TO IMPROVE IT

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COMMUNICATION OF CLIMATE CHANGE

How the risk of climate change is communicated and what we can do to improve it

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MaCSIS
Master in Comunicazione della Scienza
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COMMUNICATION OF CLIMATE CHANGE

How the risk of climate change is communicated and perceived and what we can do to improve it

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“Communicating is not just sending information to someone’s address.
It means to create an experience, fully involve them, physically and mentally,
and this is an emotional skill”
Anonymous

Introduction

Surveys and research has shown that several people all over the world are aware of climate changes, but many of them do not consider climate change to be a serious problem. Some experts believe that this reasoning is due to a lack of human' affective response associated with the climate change problem. Within the last few years, both Europe and the United States have experienced a decrease in climate change concern, due, in part, to the financial crisis and the efforts made by some people to confuse the audience about the existence and seriousness of climate change. In addition, many people in developed countries in Europe and North America report as not having experienced the consequences of climate change or that it is a long-term consequence that will not happen in the near future. As a result, these people consider climate change to be of low priority and consequently, not much is being done to find a solution that could improve global climate changes. Paradoxically, people from developing countries, such as India or Brazil, show a higher concern about the climate change and its effects.

Media have, in many occasions, played an important role in creating scepticism among the audience. The political perspective of the media organisation strongly influences the way the issue of climate change is communicated. Media exaggeration on climate change and an overexposure of information about the issue have affected the way it is perceived by the people.

Since the 1990s, conservative think tanks, corporations and business groups have been accused of being engaged in deliberating denial on the science of climate change, especially in the United States. Lobbyists have conducted denial campaigns that had as an ultimate goal to reject a proposition on whether a scientific consensus exists.

When communicating climate change, individual words and longer phrases are important. Knowing the audience and how it is likely to respond to particular terms is essential. But effective communication about climate change is about more than just using the right words. The way messages are framed, the values they speak about and the narratives that bring the climate change message alive are incredibly powerful.

Social based marketing strategies have been used by both NGO and private companies in order to influence behaviours towards climate change that benefit individuals and communities. Although this approach has helped to highlight the importance on understanding motivational differences between different groups and has been successful in achieving some goals, it has also been strongly criticized by some climate change communicators since it invokes 'self-enhancing' values that might be actually reinforcing precisely other values that impede lasting change.

With the aim of communicating the seriousness about climate change, some visual representations of possible future scenarios have been produced in the last few years. At the same time, in order to communicate the effects of climate changes already observable, images of environmental refugees and drowning polar bears have been disseminated all over the globe. These two approaches of visual communication have been criticized either for being catastrophic or physically and psychologically distant from most people. Instead, communication experts believe un-threatening images that linked to people's everyday actions and concerns could be more effective.

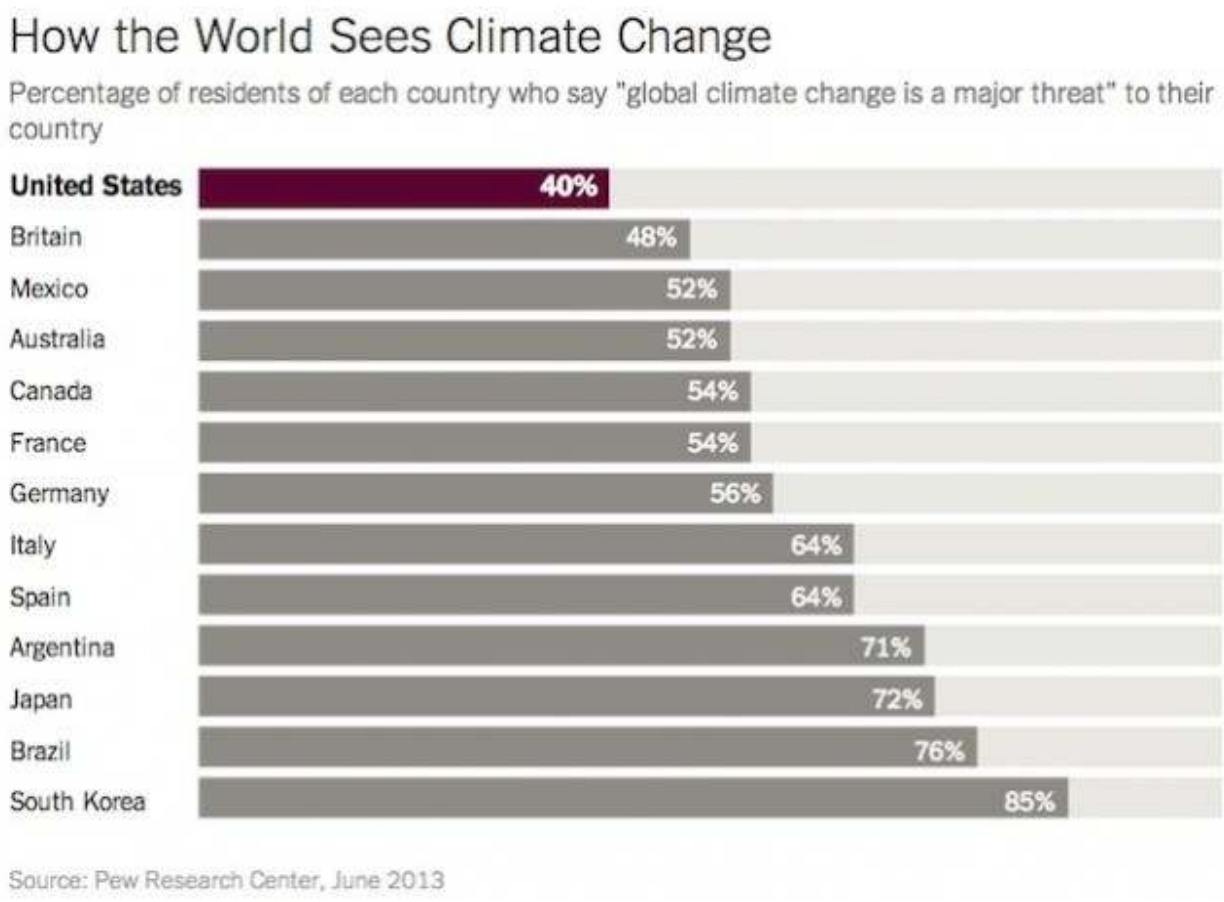
The objective of this essay is to analyse the public perception on the risks of climate changes, to get to the real reasons of scepticism and provide different approaches to improve the communication of the issue. In order to improve climate change awareness through appropriate communication of the issue, a list of climate change communication resources can be found at the end of this text, containing a number of essential resources to create effective written or spoken materials.

1. Public perception of climate change

Over the past decade, public opinion about climate change has become increasingly well documented. Awareness about climate change is very high, and a number of surveys have shown that the European and North American member of the public express substantial concern about it. Nonetheless, from 2011, climate change has dropped from the second to the third most widely mentioned problem, behind the economic situation in Europe.

Perhaps inevitably, evidence on public attitudes tends to focus on European and North American members of the public. However, a recent global poll of attitudes to climate change and sustainability issues more generally presented a complex international picture. Taking all nations together, 69% of the citizens in 51 nations are concerned about climate change. However, in the US, only 48% are concerned compared to 51% in 2009 and 62% in 2007, while in China levels of concern have also reduced from 77% in 2009 to 64% in 2011. The most concerned region of the world was Latin America (90%), in India, concern about global warming is at 86% (a rise from 80% in 2007), and in Europe concern has risen from 58% to 68% since 2009.

A Pew research survey from 2013 shows the differences in terms of perception of the seriousness of climate change in some European countries compared with United States and South America or Asia. A more detailed analysis of the situation in Europe and US has been taken into consideration in order to discuss the causes of this variability in the next chapters.



1.1 Public perception of climate change in Europe

Eurobarometer conducted a special survey conducted from November to December 2013 and the results were published in March 2014. The first chapter examines Europeans' general perceptions of climate change. It assesses what the general public thinks is the single most serious problem facing the world as a whole, and what they consider to be other serious problems up to a maximum of three. It then looks at how serious a problem Europeans think climate change is at the present time.

As Europe takes action to meet the objectives of preventing and minimising the impact of climate change, it is important to understand the attitudes and behaviour of the EU general population.

This Eurobarometer Survey provides also measures on previous waves of this Eurobarometer Survey conducted in 2011 in order to provide information about the changes in people's perception of the issue of climate change. The most relevant information can be found following each question of the toll.

Perceptions of climate change in relation to other world problems

Half of all Europeans think that climate change is one of the world's most serious problems and around one in six Europeans (16%) think it is the single most serious problem. The proportion of people who think that it is one of the most serious problems ranges from 81% in Sweden to 28% in Estonia.

Compared with 2011, there have been small decreases in the proportion of Europeans thinking climate change is the single most serious problem (-4 percentage points) and the proportion mentioning it as one of the world's most serious problems (-1 point).

Perceptions of the seriousness of climate change

Climate change is perceived to be the third most serious issue facing the world, behind poverty, hunger and lack of drinking water, and the economic situation. While in 2011 it was seen as the second most serious, in 2013 the economic situation became the second most serious problem displacing the climate change to the third place. However, the majority of Europeans recognise climate change as a serious problem. The overall average score for the 28 countries participant on the seriousness stands at 7.3 up to 10, where 10 means an "extremely serious problem" and 1 represent "not at all a serious problem". In 2011 the average score was slightly higher, 7.4 up to 10. Nine in ten Europeans think that climate change is a very serious or a serious problem, with 69% scoring it 7-10 and 21% scoring it 5-6." Only a minority (9%) believe that climate change is not serious problem (scoring it 1-4). These results are similar to those reported in 2011.

Whether they agree or disagree that fighting climate change can boost the economy and jobs within the EU or that reducing the import of fossil fuel from outside the EU benefits the EU economy

Four in five Europeans (80%) agree that fighting climate change and using energy more efficiently can boost the economy and jobs in the EU, with around three in ten (31%) saying that they "totally agree". The results are similar to those from 2011.

Seven in ten Europeans (70%) agree that reducing fossil fuel imports from outside the EU could provide the EU with economic benefits, with around one in four (26%) saying they "totally agree".

Opinions on who within the EU is responsible for tackling climate change

Europeans are most likely to point the national governments (48%) as the ones responsible for tackling climate change %). Europeans also think that the responsibility lies with business and industry (41%) and the EU (39%). Only one in four Europeans thinks they have a personal responsibility for tackling climate change.

Since 2011 there have been increases in the proportions mentioning national governments (+7 percentage points); business and industry (+6 points); the EU and personal responsibility (+4 points in each).

Whether they have taken personal action to fight climate change and what actions they have taken

Half of all Europeans report that they have taken some form of action in the past six months to tackle climate change. 80% of the people asked in Sweden say that they have taken some form of action (80%), compared with a quarter or less of people in Estonia (25%) and Romania (23%).

When prompted with a list of specific actions to fight climate change, and with no timescale specified, the proportion reporting that they have taken some form of action rises to 89% of all Europeans, with this figure showing an increase since 2011 (+4 percentage points).

The action Europeans are most likely to say they have taken is to reduce their waste and regularly recycle it (69%). The other actions most widely undertaken include: trying to cut down on the use of disposable items (mentioned by 51%); buying local and seasonal produce whenever possible (36%); choosing new household appliances mainly because they are more energy-efficient (34%); regularly using environmentally-friendly forms of transport as an alternative to their own car (28%); and improving home insulation to reduce energy consumption (21%).

How important they think it is for their government to provide support for improving energy efficiency

Over nine in ten Europeans (92%) think that it is important for their government to provide support for improving energy efficiency by 2030 and, from those, around half (51%) saying that it is “very important” for their government to do so.

How important they think it is for their government to set targets to increase the amount of renewable energy by 2030

Nine in ten Europeans think that it is important for their government to set targets to increase the amount of renewable energy used by 2030, with around half (49%) saying it is “very important”.

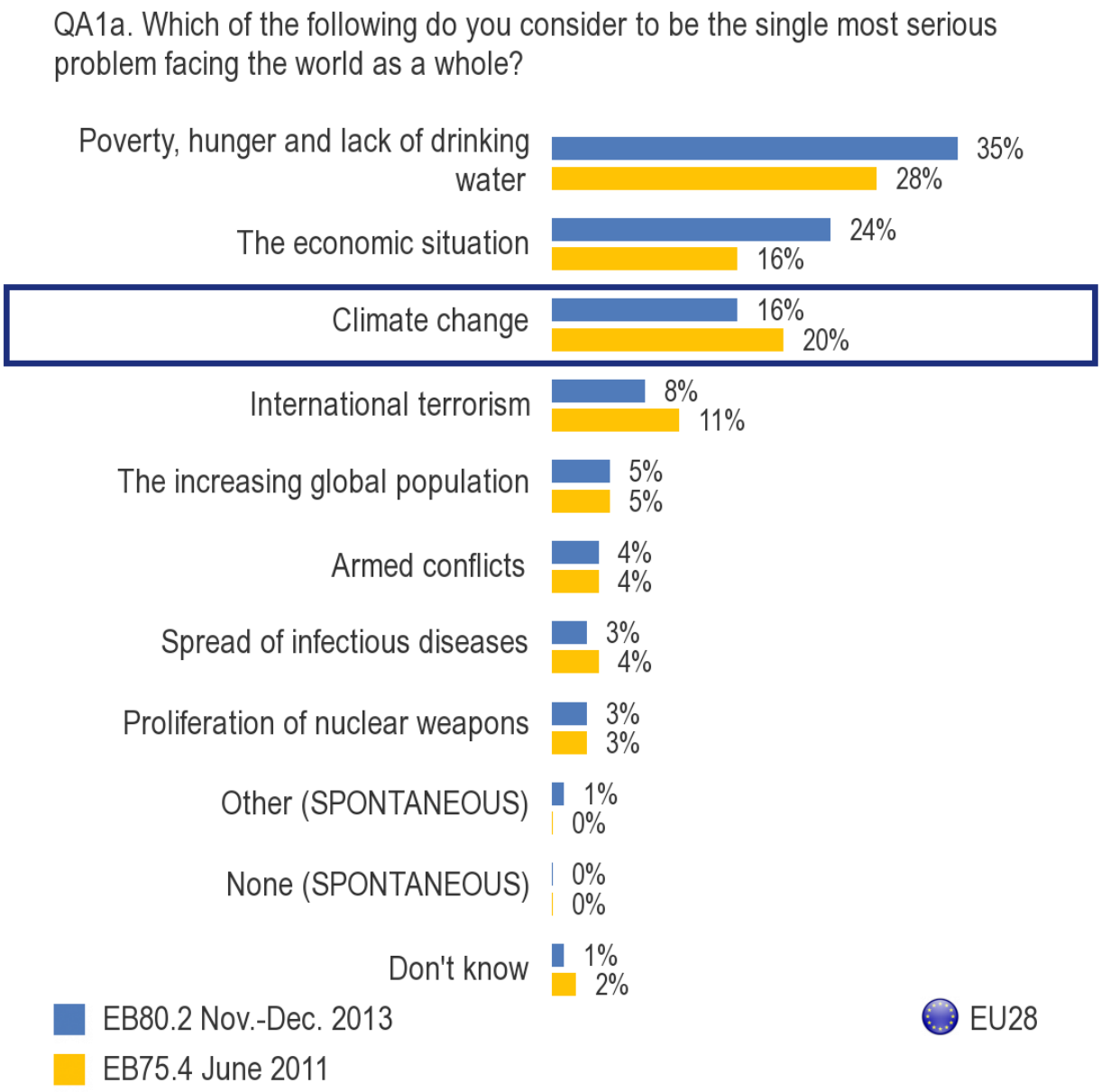
Perceptions of climate change as a global problem

Climate change as the most single problem

Respondents were asked what they considered to be the single most serious problem facing the world as a whole.

The most widespread view is that poverty, hunger and lack of drinking water is the single most serious problem facing the world, mentioned by 35% of Europeans, followed by the economic situation, mentioned by around a quarter of Europeans (24%). Around one in six Europeans (16%) thinks that climate change is the most serious problem. Smaller proportions mention international terrorism (8%), the increasing global population (5%), armed conflicts (4%), the spread of infectious diseases (3%) and the proliferation of nuclear weapons (3%).

Compared with the results from the 2011 survey, there have been increases in the proportions mentioning poverty, hunger and lack of drinking water: +7 percentage points from 28% to 35% and the economic situation +8 points from 16% to 24%, **and decreases in the proportions mentioning climate change, -4 points from 20% to 16%.**

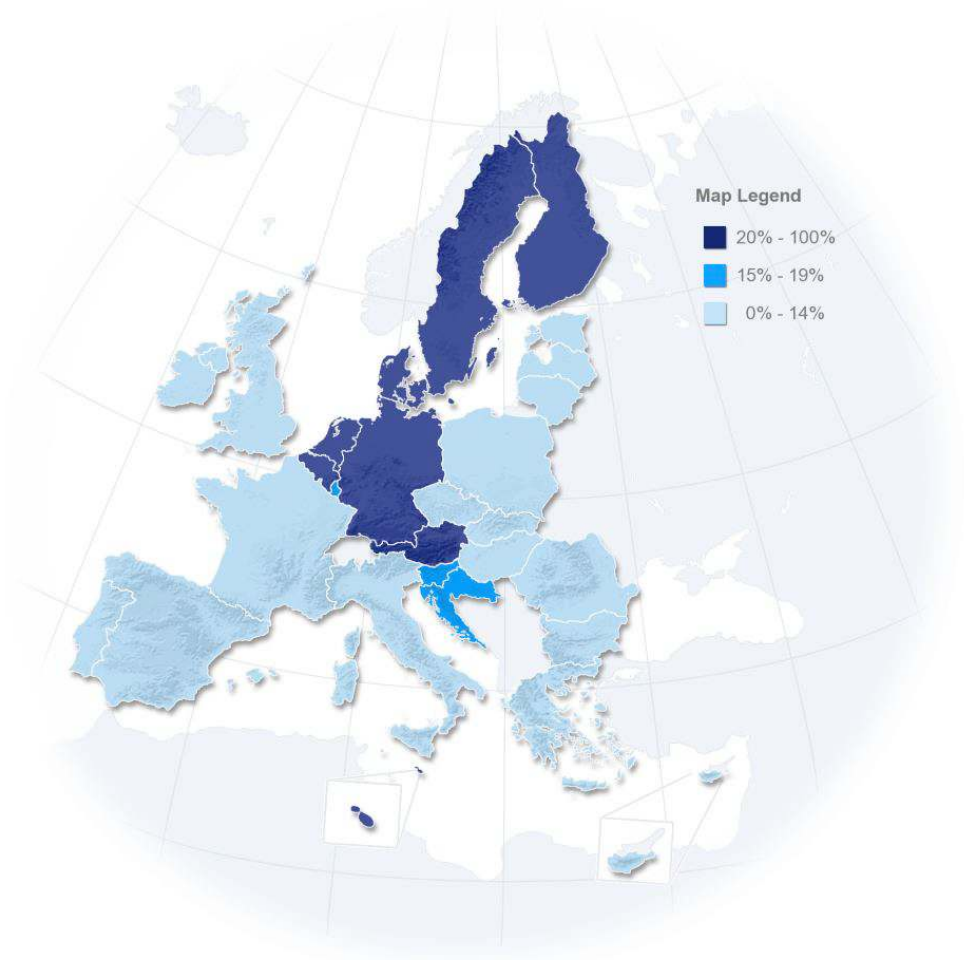


There are three Member States where respondents are most likely to think climate change is the single most serious problem facing the world today: Sweden (39%), and Denmark and Malta (30% in each). This broadly reflects the findings in 2011.

SE	39%
DK	30%
MT	30%
DE	27%
BE	24%
AT	24%
FI	23%
NL	20%
LU	17%
SI	17%
EU	16%
HR	16%
IT	14%
FR	14%
IE	14%
LT	12%
UK	12%
SK	12%
PL	11%
CZ	11%
RO	10%
HU	10%
BG	9%
LV	9%
EL	9%
EE	9%
CY	8%
ES	8%
PT	6%

Question: QA1a. Which of the following do you consider to be the single most serious problem facing the world as a whole?

Answers: Climate change



QA1a Which of the following do you consider to be the single most serious problem facing the world as a whole?

	Poverty, hunger and lack of drinking water	The economic situation	Climate change	International terrorism	The increasing global population	Armed conflicts	Spread of infectious diseases	Proliferation of nuclear weapons	Other (SPONTANEOUS)	Other (SPONTANEOUS)	Don't know
EU28	35%	24%	16%	8%	5%	4%	3%	3%	1%	0%	1%
BE	34%	20%	24%	8%	6%	3%	2%	2%	1%	0%	0%
BG	35%	28%	9%	9%	2%	9%	2%	4%	1%	0%	1%
CZ	22%	37%	11%	10%	6%	5%	4%	4%	0%	1%	0%
DK	29%	10%	30%	11%	11%	4%	1%	3%	1%	0%	0%
DE	36%	8%	27%	10%	8%	5%	1%	3%	1%	0%	1%
EE	27%	29%	9%	9%	8%	7%	2%	4%	3%	0%	2%
IE	36%	28%	14%	7%	5%	4%	2%	3%	1%	0%	0%
EL	42%	41%	9%	2%	1%	1%	1%	2%	1%	0%	0%
ES	45%	39%	8%	2%	1%	2%	1%	1%	1%	0%	0%
FR	43%	22%	14%	9%	4%	2%	2%	4%	0%	0%	0%
HR	39%	29%	16%	4%	2%	4%	1%	4%	0%	1%	0%
IT	21%	47%	14%	7%	1%	2%	5%	2%	1%	0%	0%
CY	34%	46%	8%	3%	2%	1%	2%	1%	3%	0%	0%
LV	26%	32%	9%	10%	3%	7%	4%	4%	2%	1%	2%
LT	29%	34%	12%	8%	4%	5%	3%	3%	1%	0%	1%
LU	46%	14%	17%	8%	5%	4%	2%	2%	1%	1%	0%
HU	41%	27%	10%	6%	6%	3%	4%	2%	1%	0%	0%
MT	28%	15%	30%	10%	4%	4%	6%	2%	1%	0%	0%
AT	31%	20%	24%	5%	8%	5%	3%	3%	1%	0%	0%
NL	39%	9%	20%	9%	12%	6%	1%	2%	2%	0%	0%
PL	32%	19%	11%	10%	1%	11%	5%	7%	0%	1%	3%
PT	49%	27%	6%	4%	1%	5%	2%	2%	3%	0%	1%
RO	42%	30%	10%	4%	2%	2%	7%	1%	1%	0%	1%
SI	43%	28%	17%	2%	3%	1%	1%	3%	2%	0%	0%
SK	36%	34%	12%	6%	3%	5%	2%	2%	0%	0%	0%
FI	33%	9%	23%	5%	13%	7%	2%	6%	1%	0%	1%
SE	33%	5%	39%	3%	8%	4%	4%	3%	1%	0%	0%
UK	34%	11%	12%	13%	14%	7%	2%	2%	1%	1%	3%

Highest percentage per country | *Lowest percentage per country*

Highest percentage per item | Lowest percentage per item

There have been notable shifts in some countries since 2011 in the proportions citing a particular problem as the most serious one facing the world. The perception that the single most serious problem is climate change has increased in Sweden (+9 percentage points to 39%), and Austria (+5 points to 24%) and declined in Luxembourg (-17 points to 17%), Spain (-16 points to 8%), Cyprus (-16 points to 8%), Latvia (-13 points to 9%), Lithuania (-9 points to 12%), Poland (-9 points to 11%) and Slovenia (-8 points to 17%).

The perception of the economic situation as the most serious problem has increased in 25 Member States (Denmark, Ireland and the UK are the exceptions), with the most notable increases in **Italy (+23 percentage points to 47%),** becoming the second most widely mentioned problem and placing the climate change in third place.

The most notable shifts in opinion since 2011 are an increase in the proportion mentioning the economic situation in Italy (+25 percentage points), France and Slovenia (+19 points in each), Estonia (+18 points), Poland (+16 points), Belgium (+15 points), Bulgaria, Cyprus and Slovakia (+14 points in each), the Czech Republic and Luxembourg (+13 points in each), Spain (+12 points), and Germany, Lithuania, Austria and Portugal (+11 points in each).

The greatest decreases since 2011 are in mentioning climate change in Cyprus (-23 percentage points), Latvia (-18 points), Spain and Luxembourg (-12 points in each), Bulgaria (-11 points), Slovenia (-10 points), and Greece and Romania (-8 points in each) and, to varying degrees, in all countries in Eastern Europe.

QA1a Which of the following do you consider to be the single most serious problem facing the world as a whole?

	Poverty, hunger and lack of drinking water		The economic situation		Climate change		International terrorism	
	EB80.2 Nov. - Dec. 2013	Diff. 2013-2011	EB80.2 Nov. - Dec. 2013	Diff. 2013-2011	EB80.2 Nov. - Dec. 2013	Diff. 2013-2011	EB80.2 Nov. - Dec. 2013	Diff. 2013-2011
EU28	35%	+7	24%	+8	16%	-4	8%	-3
BE	34%	+5	20%	+12	24%	=	8%	+1
BG	35%	+9	28%	+9	9%	-6	9%	-8
CZ	22%	+2	37%	+16	11%	-5	10%	-5
DK	29%	+4	10%	-2	30%	-1	11%	=
DE	36%	+8	8%	+2	27%	+2	10%	=
EE	27%	+4	29%	+17	9%	-5	9%	-6
IE	36%	+7	28%	=	14%	+1	7%	=
EL	42%	+7	41%	+5	9%	-6	2%	-1
ES	45%	+15	39%	+10	8%	-16	2%	-4
FR	43%	-1	22%	+14	14%	-6	9%	-1
HR	39%	*	29%	*	16%	*	4%	*
IT	21%	+4	47%	+23	14%	-1	7%	-8
CY	34%	+6	46%	+18	8%	-16	3%	=
LV	26%	+1	32%	+12	9%	-13	10%	+3
LT	29%	+9	34%	+9	12%	-9	8%	+1
LU	46%	+16	14%	+10	17%	-17	8%	+3
HU	41%	+4	27%	+4	10%	-4	6%	+3
MT	28%	+7	15%	+3	30%	=	10%	-1
AT	31%	+6	20%	+5	24%	+5	5%	-1
NL	39%	+8	9%	+2	20%	+2	9%	+2
PL	32%	+11	19%	+9	11%	-9	10%	-3
PT	49%	+5	27%	+2	6%	-1	4%	-5
RO	42%	+6	30%	+2	10%	-6	4%	-1
SI	43%	+13	28%	+8	17%	-8	2%	-4
SK	36%	+10	34%	+15	12%	-6	6%	-8
FI	33%	+5	9%	+3	23%	+4	5%	-5
SE	33%	-1	5%	+2	39%	+9	3%	-1
UK	34%	+14	11%	-2	12%	-6	13%	-3

Climate change as one of the most serious problems

Despite of these results, the proportion mentioning climate change as one of the most serious problems remains at a similar level, when compared with the results from 2011. However, there are notable increases in the proportion of respondents who mention poverty, hunger and lack of drinking water (+12 percentage points from 64%) and the economic situation (+13 points from 45%).

Half of Europeans think climate change is one of the most serious problems that the world faces, again placing third behind poverty, hunger and lack of drinking water, and the economic situation.

Poverty, hunger and lack of drinking water remains the most frequently mentioned problem facing the world, mentioned by 76% of Europeans. It is again followed by the economic situation, mentioned by just under three in five respondents (58%). Half (50%) of Europeans think that climate change is one of the most serious problems.

At national level, the Member States with the highest proportion of respondents mentioning climate change as one of the most serious problems facing the world are Sweden (81%), Denmark (73%), and Germany and Austria (70% in each). It is least likely to be a view held in Estonia (28%), Latvia and Portugal (33% in each), Bulgaria (35%), and Romania, Poland and the Czech Republic (38% in each).

Demographic groups

The demographic groups most likely to think that climate change is one of the most serious problems facing the world as a whole are those who finished their full-time education aged 20 or over (58%), specially when compared with those who finished their education at the age of 15 or under (41%) or 16-19 (49%).

The managers (62%), particularly when compared with house persons (43%) and the unemployed (45%)

And people who almost never or never struggle to pay household bills (54%), particularly when compared with those who struggle most of the time (40%).

Perceived seriousness of climate change

The majority of Europeans recognise climate change as a very serious problem. The overall average score for the EU28 stands at 7.3, which is similar to the score of 7.4 in 2011.

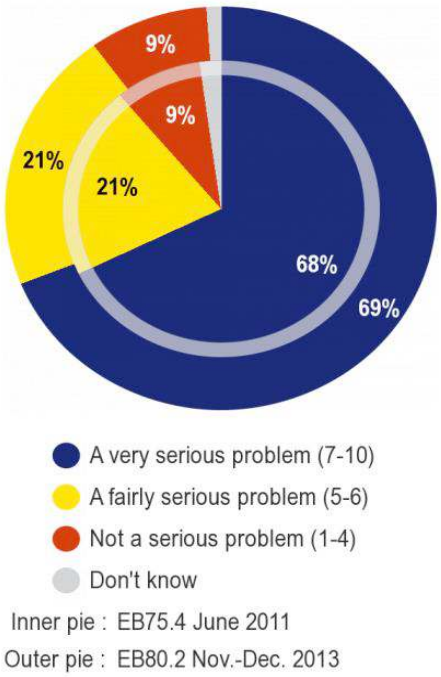
Around seven in ten respondents (69%) say that climate change is a very serious problem (scoring it 7-10), and a further fifth (21%) think that climate change is a fairly serious problem (scoring it 5-6), which means that **90% of Europeans recognise climate change as a very serious problem or fairly serious problem**. Only a minority (9%) believe that climate change is not a serious problem (scoring it 1-4).

It is worth noting that, while fewer Europeans now perceive climate change as less of a serious problem than the economic situation, the proportions believing that the problem of climate change is very serious, fairly serious and not serious remain unchanged since 2011.

QA2 And how serious a problem do you think climate change is at this moment? Please use a scale from 1 to 10, with '1' meaning it is "not at all a serious problem" and '10' meaning it is "an extremely serious problem".

	Average	
	EB80.2 Nov. - Dec. 2013	Diff. 2013-2011
EU28	7.3	-0.1
IT	8.2	0.4
EL	8.0	-0.6
HU	8.0	=
ES	7.9	-0.1
AT	7.9	0.2
SK	7.9	-0.3
PT	7.8	0.1
SI	7.7	=
DE	7.6	0.3
CY	7.6	-1.3
BG	7.5	-0.3
MT	7.5	-0.5
HR	7.4	*
CZ	7.3	-0.3
SE	7.3	0.4
BE	7.2	0.1
LU	7.2	-0.4
RO	7.2	-0.8
FR	7.1	-0.3
LT	7.0	-0.1
PL	7.0	-0.3
DK	6.8	=
FI	6.6	0.2
IE	6.5	-0.5
NL	6.5	=
UK	6.1	-0.3
LV	6.0	-1
EE	5.6	-0.5

QA2(2). And how serious a problem do you think climate change is at this moment? Please use a scale from 1 to 10, with '1' meaning it is "not at all a serious problem" and '10' meaning it is "an extremely serious problem".



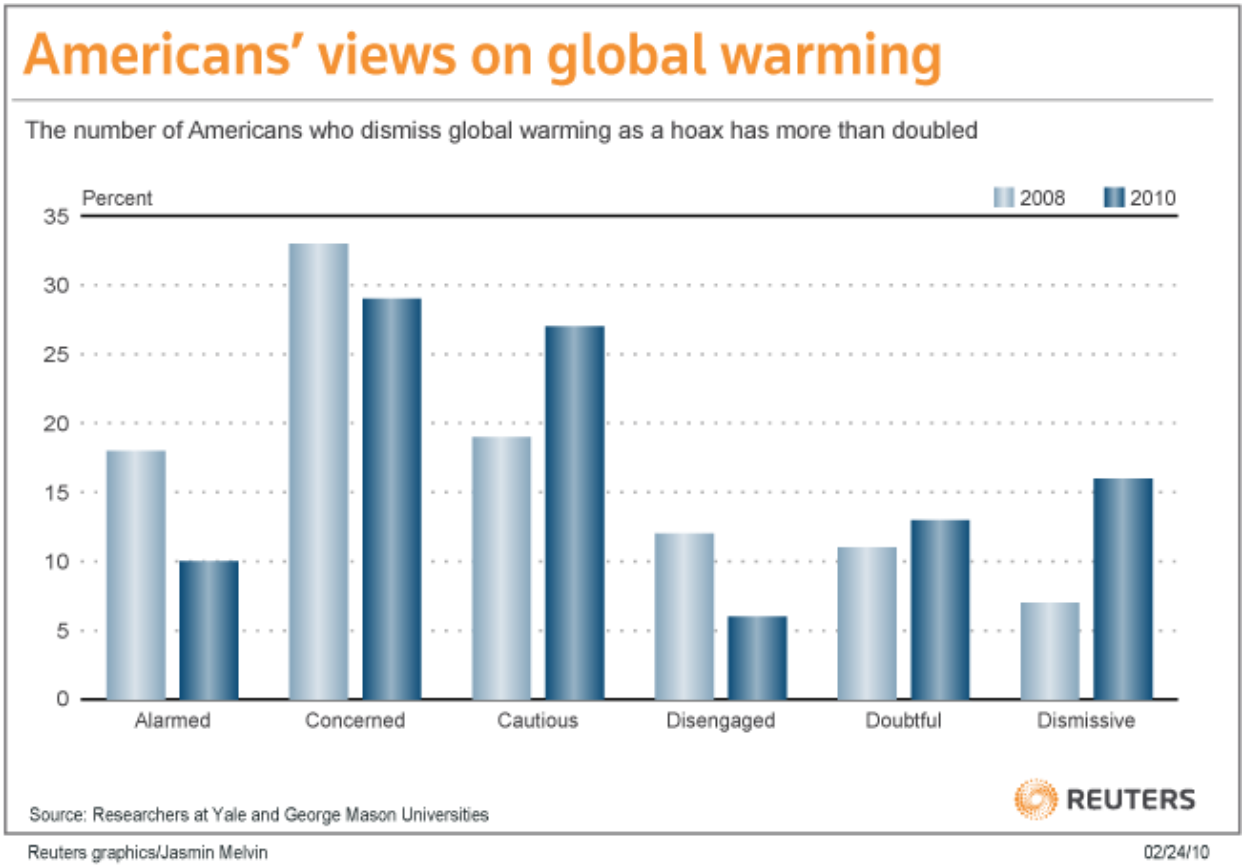
Member States with the highest scores on this measure are Italy (8.2), Greece and Hungary (8.0 in each), and Spain, Austria and Slovakia (7.9 in each). Those with the lowest overall scores are the UK (6.1), Latvia (6.0) and Estonia (5.6). Any increases in concern since 2011 are small, with the most notable shifts among respondents in **Italy** (up from an average score of 7.8 out of 10 in 2011 to 8.2 in 2013).

1.2 Public perception of climate change in the United States

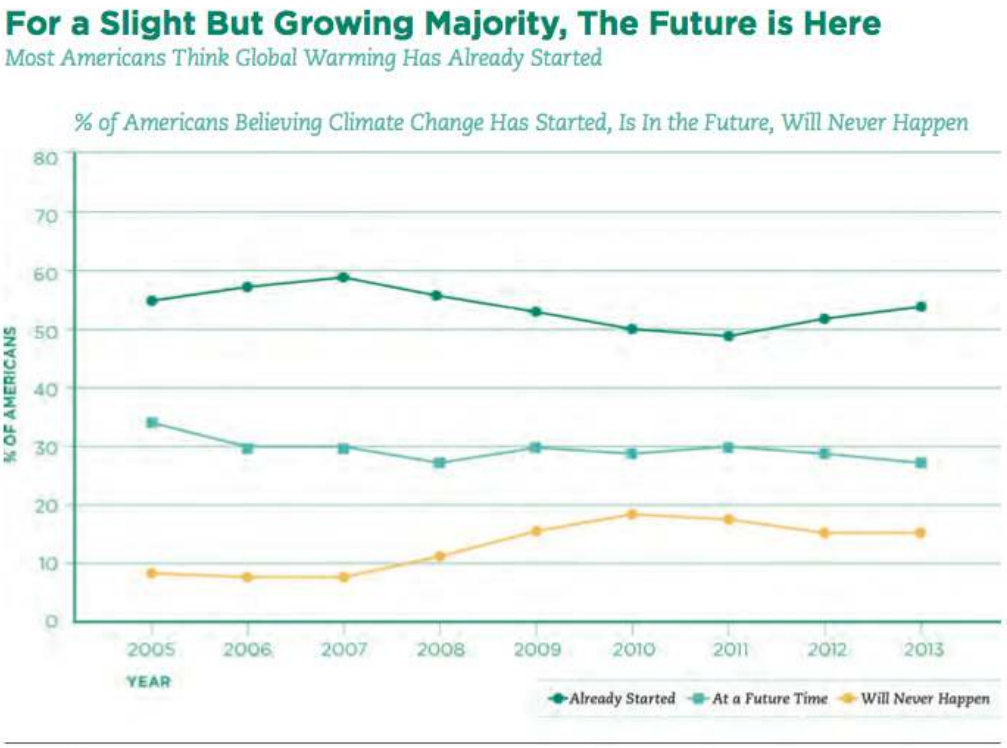
While in Europe there has been a continuity regarding to the perception of the global warming as a serious problem and, therefore, the fact that the global warming is real and is happening now, in the US there is still a considerable amount of population that either think that climate change is not real or that it is not happening yet.

Surveys show how between 2009 and 2011 there was in US a significant decrease in the perception of global warming as a real fact. At the same time it was observed how, among those still thinking that global warming was a real fact, the opinion that it had already started lost strength. These variations are the consequence of the coincidence of some circumstances. For instance, people tend to perceive the seriousness of the global warming when summers are particularly warm or winters are not as cold as usual. This perception is wrong since the global warming is a global trend that can be confirmed only comparing the average of the global temperatures. A single event registered in a delimited geographic area, for example a snowstorm that takes place in Wisconsin, cannot be used to confirm or deny the existence of a global rising of the average temperatures. The period in which the decrease was noticed, coincided with the financial crisis, which probably drove the attention to other problems as unemployment and job security. Besides these two unfortunate coincidences, there is one more possible cause for this change among the public opinion: the disinformation campaigns run by lobbies that try to discredit the climate change and the ones who believe in it.

"There are many possible reasons for declines in concern about climate change...immediate worries such as job security, local school quality, crime and economic well-being have all diminished media attention for climate stories in the past years. In the face of other pressing concerns, a public "caring capacity" for climate change has been tested. Without continued attention paid to global warming/climate change in the media, such concerns may have faded from the collective public conscience" (Nielson, 2011).

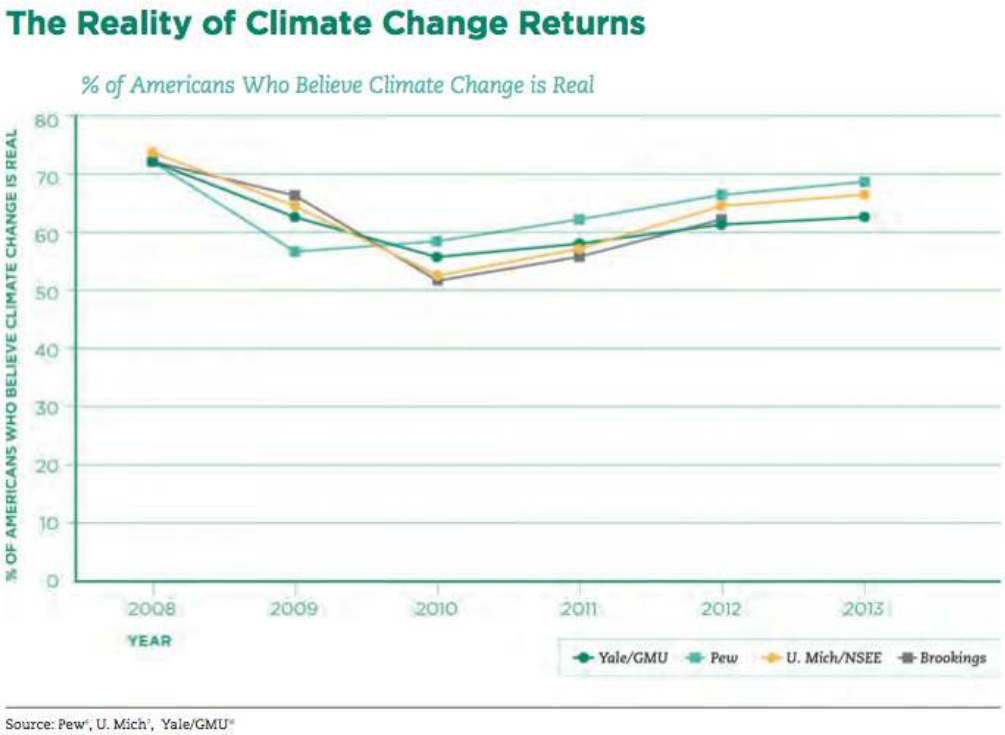


In 2013, 69% of the US said there is solid evidence that the average global temperature has been raising for a few decades (Pew, March 2013), and 62% of Americans said there is already scientific consensus for climate change. (Gallup, March 2013).

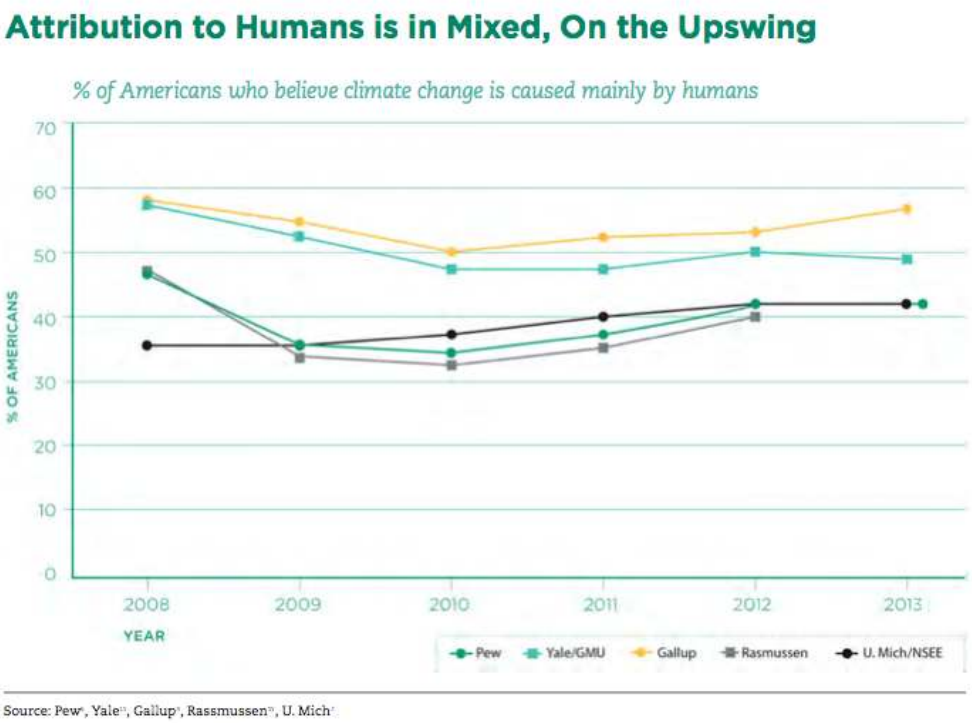


Source: Gallup[3], 2013

In the graphic below can be observed how the believe in the existence of climate change in the US decreased notably in 2009 and 2010.



Source: Pew[4], U. Mich[5], Yale/GMU[6]

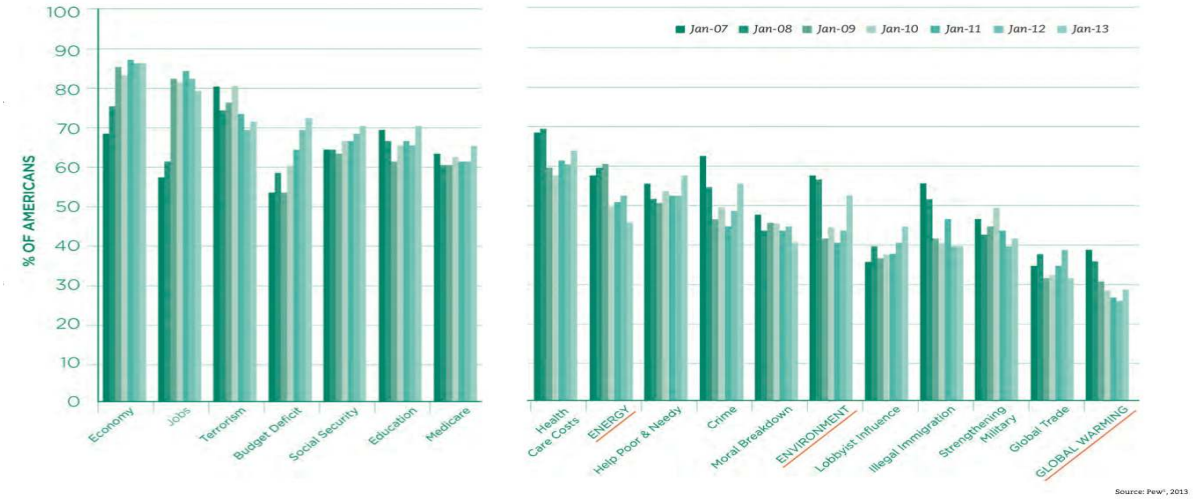


Broken down by state, Americans believe climate change is human-caused at levels of 66% to 99%, the lowest state still showing two-thirds agreement for this idea. (Jon Krosnick, 2011 presentation, Stanford Woods Institute)

Demographic groups

People of colour are more concerned about climate than whites, by double-digit margins: 86% of African Americans said they wanted the President to take “significant steps” to address climate change now. So did 76% of Latinos, compared to 60% of Caucasians (NLCV poll, Feb. 2013).

When asked about in Pew's annual survey of national priorities, climate change typically ranks low. In 2013, however, there was an up tick in priority. Similarly, there was a spike in priority of the environment over the last two years. This is a good sign for American awareness and public will for solutions, and a useful set of data for engagement: many of the highest scoring priorities such as health and the economy can be linked in outreach efforts to climate change.



Economy and climate change

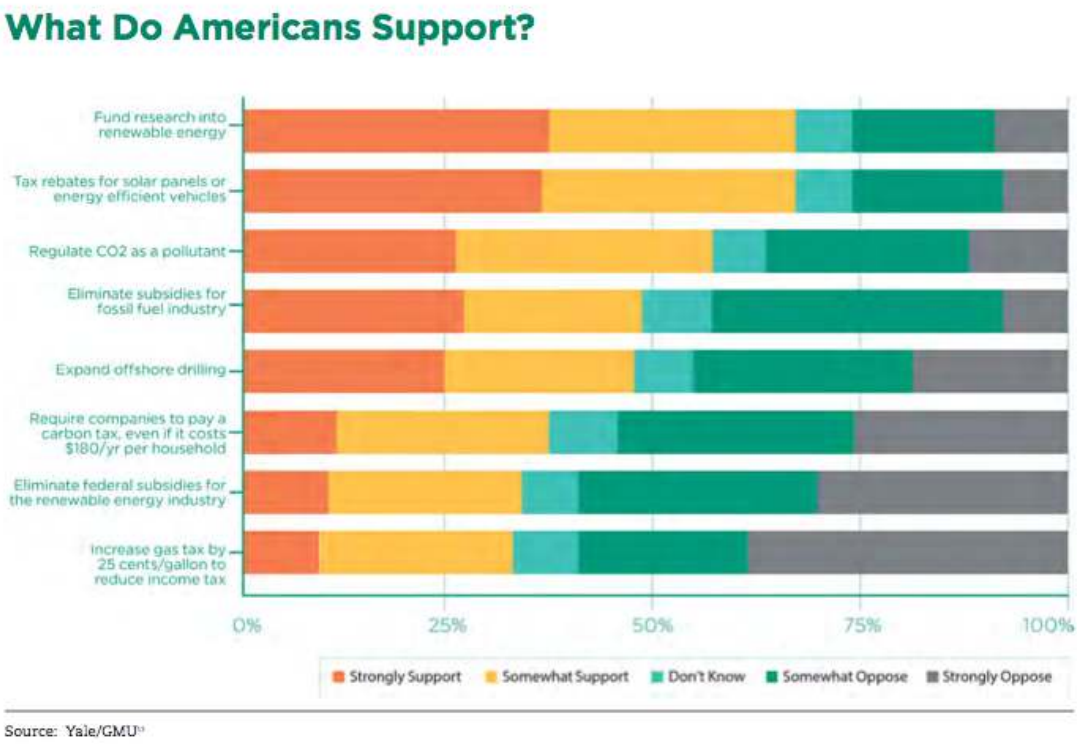
Although pollsters commonly pit the economy and the environment against each other, the truth is that for many Americans, the environment is the economy.

When asked if the U.S. should do something about climate change even if it has economic costs, 88% of Americans say yes (Yale, 2012). That includes a 44% that approve of a moderate action with moderate costs, and another 24% who want large-scale action even if the economic costs were great.

Addressing climate change is beginning to be seen as an opportunity. Many Americans see benefits in working together on climate: 42% said that preparing for climate change will help the U.S. economy (Stanford Woods, 2013).

When it comes to some policy issues, “mainstream America” is moving towards support for climate solutions.

A majority of people (61%) support a carbon tax on companies to fund low-carbon policies such as investment in renewables while 68% support the EPA regulating carbon dioxide as a pollutant (Yale 2013).



Americans have become less confident that their individual actions to save energy will reduce their contribution to global warming: 32%, down 16 points since 2008.

60 % of Americans are also less likely to say that if most people in the United States took similar actions, it would reduce global warming “a lot” or “some”. Down 18 points since 2008 (Yale, 2012).

2. Scepticism

Although scientific evidence about the existence of climate change is overwhelming, there are still some sceptical people about it.

It is widely accepted that if people do not accept the science of climate change, it is because they do not understand it, or because they don't know enough about it. It is true that someone who knows very little about climate change is unlikely to care a great deal about its consequences. So it is important that the facts about climate change are widely known and readily available.

To provide people with this information, there are several comprehensive summaries of the key facts and figures of climate change available. For instance, the website 'Sceptical Science' seeks to explain climate change rebutting, at the same time, global warming misinformation. The web- site Real Climate, which is run by working climate scientists, contains a great deal of (sometimes very technical) information about the science of climate change. And the British newspaper The Guardian offers a very readable series of answers to 'frequently asked questions' about climate change.

Although accurate factual information has been available for anyone who has wanted to find it for a long time, there are still some people unconvinced that climate change is actually happening – or express more uncertainty than scientists do about the seriousness of the problem. The truth is that, while dispelling myths about climate change is a valuable public service to offer, the scepticism about climate change is not just a dispute over the science.

Climate change is one of those topics where members of the public show trouble to understand the science. Public opinion often turns against a new technology or development even if the science behind it is sound. Researchers who study public attitudes to science used to think that increasing the knowledge by providing more facts and figures was the way to improve public engagement with science. This approach is known as the 'deficit model' of science communication due to the fact that it was assumed that opposition to a particular scientific development was based on a deficit of knowledge (Irwin & Wynne, 1996). However, it soon became clear that many of the arguments about 'scientific' controversies were not actually about 'science'. Social research has made possible to build up a picture of the sort of people who are likely to be climate sceptics. People who are sceptical about climate change are likely to be older, male and politically conservative (McCright & Dunlap, 2011). The ideology of the right seems to be threatened by climate change. Similar researches have shown that people's positions about scientific topics tend to be strongly influenced by their political ideologies and world-view (Kahan et al, 2010).

For this reason, scientific reports like the ones published by the IPCC, the Intergovernmental Panel on Climate Change, are strongly criticized by those with a conservative mind-set. For people who carry this kind of beliefs international regulations are perceived as a threat to trade and industry, and an international report that speaks of consensus can be quite alarming.

The source of a climate change message is also very important. The audience is more likely to trust the arguments of a topic when they trust the communicator. For an individual who believes that industry should be left to regulate itself, a message about environmental regulations from a campaigner who lobbies for stricter rules for industry is likely to fall on deaf ears.

One of the most common mistakes made when communicating climate change is to explain the science over and over expecting to overcome the scepticism about the topic. For sceptics who have already heard everything they need to hear, explaining it to them louder won't probably make any change.

It is important then that communicators separate the science from the politics in order to bring the real cause of disagreement out into open. The fact that science tells us that climate change is happening, and what is causing it, doesn't mean that science can tell us which way to respond. Once society have been informed about the causes and effects of climate change, citizens and politicians are responsible for making decisions to mitigate the consequences. Society can do nothing, can build technologies, can raise taxes on carbon and fuel, can change its behaviour or can regulate industry. Citizens should be the subjects of debate in this decision-making. Thus, opportunities for people to deliberate with each other about climate change should be provided in order to allow the reasons for disagreement to come to the fore. Obscuring these disagreements only leads to political fighting battles that use the language of science and keep citizens out of the discussion.

2.1 Climate change scepticism and the media

The media have a crucial role in climate change communication. Most people do not read scientific reports (like the ones released by the IPCC), specialist websites or blogs. Although the science of climate change should be reported straightforward way by television networks and newspapers, there are considerable differences between the editorial lines taken by different media organisations about the existence and the risks of climate change.

There is a strong relationship between the position on climate change of a media organisation and its political perspective (Painter, 2011). Right leaning media such as US Wall Street Journal are more likely to carry sceptical opinions about climate change compared to the left leaning media organisations. The most famous left-leaning UK newspaper, the Guardian, has a website internationally known for reporting the climate change and other environmental issues, where sceptical opinions are rarely found. The difference of the information provided by different media according to their political beliefs generate a controversy that has been often cited as a reason for scepticism about climate change. It looks like public perception of the topic is highly influenced by the political beliefs of the media that provide with that information (Poortinga et al., 2011).

But media exaggeration of climate change is also one of the measures that has been said to increase the scepticism among the public.

The analysis of media coverage of climate change in the English speaking media, in UK and US, has shown that sometimes radio, television and newspapers have interpreted too simplistically the notion of providing a "balanced" set of views. This can lead to competing points of view on a scientific issue being presented as equally supported, when in fact they are not. This is considered "balance as bias" (Boykoff & Boykoff, 2004).

The BBC realized this when in 2011 the BBC Trust commissioned a report that analysed the way three scientific topics (including climate change) were reported by the BBC. The report found that, in an attempt to deliver 'balanced' coverage of climate change, denier's opinions appeared too often despite occupying a marginal position in scientific debates. The BBC then was actually biasing their coverage by including an excessive amount of sceptical voices. The weight of scientific evidence on climate change is very heavy against sceptical positions and that's what the information reported should reflect. As consequence, people continue to view the media as offering a range of viewpoints on climate change, creating the impression that the causes of climate change are more controversial than they actually are.

There is another research that confirms that the phenomenon 'balance by bias' is typical from the English-speaking world. A report from the Oxford Reuters Institute for the Study of Journalism (Painter, 2011) looked specifically at the reporting of climate change scepticism in six different nations: UK, US, Brazil, China, India and France. Analysing the content of a selection of the newspapers in each of these countries, a remarkable finding emerged: sceptical

voices were much more likely to be reported in the English-speaking UK and US than in Brazil, China, India and France. In fact, more than 80% of the sceptical voices reported in the study were found in the UK & US papers. This suggests that scepticism about climate change in the media is to some extent an 'Anglophone' phenomenon. The authors of the report suggested that part of the reason for this disparity between different countries is the presence of organised lobbying interests in the US and the UK, who actively shape the media agenda.

The Carbon Brief is one of the best resources for understanding the way climate change is reported in the media. In the website there are fact-checks stories about climate change cross-referencing them against peer-reviewed literature. The results of those cross-check studies show that distortions of climate change science occur regularly, partly because climate change is a complex area, and partly because various interests, motivated by finance or ideology, have sought to confuse the issue.

3. Climate change denial

Climate change denial is based on the dismissal of the scientific consensus on the extent of global warming, its importance, and its connection to human behaviour. Is it strongly linked to commercial vantages and ideological reasons.

Denialism has been also defined as the employment of rhetorical arguments to give the appearance of legitimate debate where there is none, an approach that has the ultimate goal of rejecting a proposition on which a scientific consensus exists. It has been associated with fossil fuels lobby, the Koch brothers, industry advocates and free market think tanks, often in the United States. Lobbyist conduct campaigns to undermine public confidence in scientific opinion on climate change.

Some commentators say that climate change denial differs from scepticism, which is essential for good science. The public climate change scepticism due to industry-funded denial has been often compared to the efforts by the tobacco industry in the 1990s to undermine scientific evidence on the dangers of second-hand smoke.

Journalists and newspaper columnists have described climate change denial as a form of denialism. Several commentators have also compared climate change denial with Holocaust denial.

The term “denial” associated with *climate change* has been also criticized as an attempt to de legitimize sceptical views and portray them as immoral. Moreover, the climate change denial has been considered by organizations like the National Centre for Science Education as a form of pseudoscience.

Conservative think tanks, corporations and business groups have been accused of being engaged in deliberate denial of the science of climate change since the 1990s.

Through a single organisation, between 2002 and 2010, conservative billionaires secretly donated nearly $120 million to more than 100 organizations seeking to cast doubt on the science behind climate change.

In one of the first attempts by industry to influence public opinion on climate change, a 1998 proposal (later posted online by Greenpeace) was circulated among U.S. opponents of a treaty to fight global warming, including both industry and conservative political groups, in an effort to influence public perception of the extent of the problem. A memo written by a public relations specialist for the American Petroleum Institute and then leaked to *The New York Times* described a plan "to recruit a cadre of scientists who share the industry's views of climate science and to train them in public relations so they can help convince journalists, politicians and the public that the risk of global warming is too uncertain to justify controls on greenhouse gases."

In “*Requiem for a Species: Why We Resist the Truth about Climate Change* (2010)”, Clive Hamilton describes a campaign to attack the science relating to climate change, originating with the astroturfing campaigns initiated by the tobacco industry in the 1990s. He documents the establishment of The *Advancement of Sound Science Coalition* (TASSC) as a 'fake front group' set up 'to link concerns about passive smoking with a range of other popular anxieties, including global warming'. The public relations strategy was to cast doubt on the science, characterizing it as junk science, and therefore to turn public opinion against any calls for government intervention based on the science. As the 1990s progressed, TASSC began receiving donations from Exxon and other oil companies and its "junk science" website began to carry material attacking climate change science.

Naomi Oreskes, co-author of *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, describes how a small group of retired cold-war nuclear physicists, who through their weapons work had become well-connected, well-known and influential people, promoted the idea of 'doubt' in several areas of US public debate.

In 1984 George C. Marshall Institute was founded initially to defend Ronald Reagan's Strategic Defence Initiative (SDI) and adopted since the late 1980s an environmental scepticism view, particularly about the science of climate change.

After the Cold War ended, they continued through the Marshall Institute to campaign against environmental issues from acid rain, the ozone hole, second-hand smoke and the dangers of DDT on to a campaign against global warming. In each case their argument was the same: simply that the science was too uncertain to justify any government intervention in the market place.

3.1 Lobbying

As they did earlier with the tobacco industry, lobbyists attempt to discredit the scientific research by creating doubt and manipulating debate. They work to discredit the scientists involved, to dispute their findings, and to create and maintain an apparent controversy by promoting claims that contradict scientific research.

In 2006, George Monbiot wrote in *The Guardian* about similarities between the methods of groups funded by Exxon Mobile, and those of the tobacco giant Philip Morris, including direct attacks on peer-reviewed science, and attempts to create public controversy and doubt.

Former National Academy of Sciences president Dr. Frederick Seitz, who, according to an article by Mark Hertsgaard in *Vanity Fair*, earned about US$585,000 in the 1970s and 1980s as a consultant to R.J. Reynolds Tobacco Company, went on to chair groups such as the Science and Environmental Policy Project and the George C. Marshall Institute alleged to have made efforts to minimize the importance global warming. Seitz stated in the 1980s that "Global warming is far more a matter of politics than of climate." Seitz authored the Oregon Petition, a document published jointly by the Marshall Institute and Oregon Institute of Science and Medicine in opposition to the Kyoto protocol. The petition and accompanying "Research Review of Global Warming Evidence" claimed:

"*The proposed limits on greenhouse gases would harm the environment, hinder the advance of science and technology, and damage the health and welfare of mankind. There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate... We are living in an increasingly lush environment of plants and animals as a result of the carbon dioxide increase. Our children will enjoy an Earth with far more plant and animal life than that with which we now are blessed. This is a wonderful and unexpected gift from the Industrial Revolution.*"

George Monbiot wrote in *The Guardian* that this petition, which he criticizes as misleading and tied to industry funding, "has been cited by almost every journalist who claims that climate change is a myth." Monbiot has written about another group founded by the tobacco lobby, The Advancement of Sound Science Coalition (TASSC), that now campaigns against measures to combat global warming.

3.2 Lobbyism in the private sector

The Guardian reported that after the IPCC released its February 2007 report, the American Enterprise Institute offered British, American and other scientists $10,000, plus travel expenses to publish articles critical of the assessment. The institute, received more than $US 1.6 million from Exxon and its vice-chairman of trustees was former head of Exxon Lee Raymond. More than 20 AEI employees worked as consultants to the George W. Bush administration.

The Royal Society conducted a survey that found ExxonMobil had given US$ 2.9 million to American groups that "misinformed the public about climate change," 39 of which "misrepresented the science of climate change by complete denial of the evidence". In 2006, the Royal Society issued a demand that ExxonMobil withdraw funding for climate change denial.

Between 1989 and 2002 the Global Climate Coalition, a group of mainly United States businesses, used aggressive lobbying and public relations tactics to oppose action to reduce greenhouse gas emissions and fight the Kyoto Protocol. The coalition was financed by large corporations and trade groups from the oil, coal and auto industries. The *New York Times* reported that "even as the coalition worked to sway opinion towards skepticism, its own scientific and technical experts were advising that the science backing the role of greenhouse gases in global warming could not be refuted." Due to a national divestiture campaign run in 2000 in the US by Passacantado and Radford, together with Ozone action, several corporate members started leaving the coalition that closed definitely in 2002.

Early in 2013, *The Guardian* revealed that two trusts, the 'DonorsTrust' and the 'Donors Capital Fund', operating out of a house in the suburbs of Washington DC, have bankrolled 102 think tanks and activist groups rising of $118m between 2002 and 2010. The stream of cash was used to fund a conservative backlash against Barack Obama's environmental initiatives and to wreck any chance of Congress taking action on climate change. Robert Brulle, a Drexel University sociologist who has researched other networks of ultra-right donors, said, "Donors Trust is just the tip of a very big iceberg."

Later in 2013, *The Guardian* reported that the State Policy Network (SPN), an umbrella group of 64 US think tanks, was involved in covert lobbying for major corporations and rightwing donors. SPN's policies are to oppose climate change regulation, as well as other causes including cutting taxes, advocating reductions in labour protection, restricting voter rights and lobbying for the tobacco industry. The report said that the SPN's funders for 2010 included AT&T and Microsoft, which each donated up to $99,000, Time Warner Cable, Verizon, the Koch brothers, the Walton family of Walmart, and Facebook.

Brothers Charles and David Koch own the controlling shares (84%) of Koch Industries, a massive conglomerate ranked as the second largest, privately owned company in America. This wealth is based mainly on fossil fuels.

The “Kochtopus” has been involved in undermining every kind of environmental progress but in particular it has opposed climate change legislation, for instance in New Hampshire and in California where it backed the infamous Prop 23 which threatened (but failed) to push back climate change legislation. In fact a Greenpeace report in 2010 (Koch Industries: Secretly Funding the Climate Denial Machine) found that they are now the leading funder of climate change disinformation, outdoing even ExxonMobil. A follow-up report in 2011 found that the Kochs are still spending vast amounts of money opposing bills to control pollution, most notably supporting Proposition 23 - a move to abolish laws controlling greenhouse gas emissions until unemployment fell below a certain level.

This corporation is now a partner to ExxonMobil, the American Petroleum Institute and other donors that support organizations and front-groups opposing progressive clean energy and climate policy. From 2005 to 2008, ExxonMobil spent $8.9 million while the Koch Industries controlled foundations contributed $24.9 million in funding to organizations of the 'climate denial machine'.

The company's tight knit network of lobbyists, former executives and organizations has created a orceful stream of misinformation that Koch-funded entities produce and disseminate. This campaign propaganda is then replicated, repackaged and echoed many times throughout the Koch-funded web of political front groups and think tanks. On repeated occasions, organizations funded by Koch foundations have led the assault on climate science and scientists, "green jobs," renewable energy and climate policy progress.

A report written by Greenpeace documents roughly 40 climate denial and opposition organizations receiving Koch foundation grants in recent years, including:

• More than $5 million to Americans for Prosperity Foundation (AFP) for its nationwide "Hot Air Tour" campaign to spreading misinformation about climate science and opposing clean energy and climate legislation.

• More than $1 million to the Heritage Foundation, a mainstay of misinformation on climate and environmental policy issues.

• Over $1 million to the Cato Institute, which disputes the scientific evidence behind global warming, questions the rationale for taking climate action, and has been heavily involved in spinning the recent ClimateGate story.

• $800,000 to the Manhattan Institute, which has hosted Bjorn Lomborg twice in the last two years. Lomborg is a prominent media spokesperson that challenges and attacks policy measures to address climate change.

3.3 Lobbyism in the public sector

In 2005, the *New York Times* reported that Philip Cooney, former fossil fuel lobbyist and "climate team leader" at the American Petroleum Institute and President George W. Bush's chief of staff of the Council on Environmental Quality, had "repeatedly edited government climate reports in ways that play down links between such emissions and global warming, according to internal documents." *Newsweek* reported that Cooney "edited a 2002 report on climate science by sprinkling it with phrases such as 'lack of understanding' and 'considerable uncertainty.'" Cooney even reportedly removed an entire section on climate in one report. Cooney announced his resignation two days after the story of his tampering with scientific reports broke, but a few days later it was announced that Cooney would take up a position with ExxonMobil.

3.4 Consequences of denialism in public perception of climate change in the United States

Manufactured uncertainty over climate change, the fundamental strategy of the "denial machine", has been very effective, particularly in the US. It has contributed to low levels of public concern and to government inaction worldwide.

Newsweek reports that whereas "majorities in Europe and Japan recognize a broad consensus among climate experts that greenhouse gases, mostly from the burning of coal, oil and natural gas to power the world's economies, are altering climate," as recently as 2006 only one third of Americans considered human activity to play a major role in climate change; 64% believed that

scientists disagreed about it "a lot." A 2007 *Newsweek* poll found these numbers were declining, although majorities of Americans still believed neither that scientists agree climate change is taking place, nor that scientists agree climate change is caused by human activity, nor that climate change has yet had noticeable effect.

There may be multiple causes of this trend, including a focus on economic rather than environmental issues, and a negative perception of the "role the United Nations has played in promoting the global warming issue."

Another cause may be weariness from overexposure to the topic: secondary polls suggest that "many people were turned off by extremists on both sides," while others show 54% of U.S. voters believe that "the news media make global warming appear worse than it really is."

The public perception of a scientific consensus on anthropogenic global warming is a necessary element in public support for climate policy (Ding et al 2011). However, there is a significant gap between public perception and reality, with 57% of the US public either disagreeing or unaware that scientists overwhelmingly agree that the earth is warming due to human activity (Pew 2012). Contributing to this 'consensus gap' are campaigns designed to confuse the public about the level of agreement among climate scientists. While those who deny the existence of anthropogenic global warming argument is that the scientific consensus is 'on the point of collapse' (Oddie 2012) the true is that the number of scientists who agree with the general consensus grows every year. (Allègre et al 2012). A systematic, comprehensive review of the literature provides quantitative evidence countering this assertion. The number of papers rejecting anthropogenic global warming is a minuscule proportion of the published research, with the percentage slightly decreasing over time. Among papers expressing a position on anthropogenic global warming, around 14000, an overwhelming percentage (97.2% based on self-ratings, 97.1% based on abstract ratings) endorses the scientific consensus on anthropogenic global warming.

4. Communication of climate change

4.1 Social marketing

The social marketing is a common strategy used by both NGO and private companies to influence behaviours that benefit individuals and communities for the greater social good by developing and integrating marketing concepts with other approaches. It proposes segmented social change programs that are effective, efficient, equitable and sustainable.

While social marketing based strategies have been strongly criticized by some climate change communicators in the last few years, companies and organizations still take it as a valid approach to influence climate behaviours.

Futerra is a strategy and creative delivery agency specialised in branding, strategy, behaviour change and consumer campaigns in the field of sustainability. They strongly believe in social marketing as a tool to communicate climate change.

‘“Without being incentivised, excited or inspired by an aspirational ideal of where we might go as a society, few of us will act. We need to enthuse people about the potential benefits of a better way of living and overcome the vocal voices of delay and denial.”

The company works with people who want to create positive change through their brands, businesses and communications. From brand to sustainability strategy, behaviour change to consumer campaigns, they declare to create inspiring sustainable substitutes, not simply sacrifices. “Together with our clients we make sustainable development so desirable it becomes normal”.

‘“We believe that climate action is no longer a scientist’s job; it’s now a salesman’s job. You must get out there and sell the solutions we already have”.

In a guide called “Sell the Sizzle”, the company provided communication guidelines using two main metaphors: one about sausages and the other about hell. The metaphor about sausages said that, when communicating climate change, we have to “sell the sizzle, not the sausage”. As the ultimate salesman Elmer Wheeler taught in the 1950’s, “the big secret to successful selling is that you don’t advertise the sausage itself – because it’s the desirable sounds and smells which get the juices flowing and the people hungry. For years we’ve tried to ‘sell’ climate change, but a lot of people aren’t buying”.

The second metaphor says that the most common message on climate change is that “we’re all going to hell”. And it is actually what climate change looks like when you get right down to it; rising seas, scorched earth, failing food supplies, billions of starving refugees tormented by wild weather. But contrary to every expectation, hell doesn’t actually sizzle. Hell doesn’t sell. Although these Armageddon climate scenarios might be accurate and eye-catching, they haven’t changed attitudes or behaviours nearly enough. Threats of climate hell haven’t seemed to hold us back from running headlong towards it.

‘“We must build a visual and compelling vision of low carbon heaven”.

According to Futerra’s global research, our brains have a nifty little switch called the ‘availability heuristic’, which makes us more inclined to believe those things we can imagine most vividly. So if the ‘hell on earth’ picture of climate change is the most vivid and most common one we see, our mental ‘rule of thumb’ makes it the most believable outcome. It means that, while scaring people about the effects of climate change seem to be a valid method to make them

change their behaviours, it has exactly the opposite effect due to the fact that humans make real that which we can imagine most tangibly

Psychologists say that if you focus on a positive and tangible mental picture of your goal then you're more likely to achieve it. As Dr. Wayne Dyer, author of The Power of Intention, puts it: "It is a truly scientific phenomenon that when you change the way you look at things, the things you look at change."

The flip side of being able to make your dreams come true is that you can make your nightmares come true, too. If we only carry the negative picture of the future in our minds, then the switch can subconsciously encourage us to fulfil it. For decades, climate communications have built mental pictures of climate chaos, even when created with the best intentions. Futerra recognises to have taken part in it as well. They now say, though, that by highlighting the very wasteful actions that cause climate change, we risk inadvertently painting them into the mental picture.

''Size the sizzle" outlines how to communicate that new positive vision. They have built an approach on global market research including specific studies in China, the USA, the UK.

In their guide, they propose a four-step narrative.

Vision → choice → plan → action

First, open every communication with the promise of heaven. In just one sentence or a small set of images it is possible to describe a desirable and descriptive mental picture of a low carbon future (Upgrading our energy sector, protecting our big green spaces (like the Amazon) and little green spaces (like our parks), living healthier lifestyles and cutting pollution). This captures the imagination and taps into those starved and withered emotions: hope, a sense of progress and excitement about tomorrow. The second step is "choice". Once the public know that there's heaven, hell must be shown in order to advise them that today we have a choice between that positive picture and the alternative of unmitigated climate change. At that point, the spectators are fully focused in listening what has to be done to avoid the "hell" situation. So, the third step is to offer a strong and simple five-year plan. The achievements offered, they say have to be significant, big. This five-year focus is opposed to the usual twenty to thirty-year targets (long term goals results are less appealing). Finally, the narrative sets forth specific personal actions so everyone can help steer us away from danger and towards progress.

4.2 Frames and Values

One of the defining debates within the environmental movement over the past decade has been between those who believe that applying the techniques and strategies of marketing physical products is the best way of promoting sustainable behaviour and those who have argued that this approach is ultimately counterproductive. The lasts argue that trying to 'sell' climate change is not a valid method unless the right underlying values are targeted by campaigns, and unless the messages are 'framed' in a way that encourages sustainable behaviours across the board.

Values

Psychologists define values as a 'guiding principle in the life of a person' (Schwartz, 1992). Researches conducted over decades in more than sixty countries have shown that some values and beliefs tend to go together while others tend to be opposed to each other. For instance, people who identify strongly with 'self-transcending values' such as benevolence and respect for the environment, tend not to identify themselves with 'self-enhancing' values such as personal ambition and materialism.

This research has an important practical implication regarding to the communication of climate change. People holding 'self-transcendent' values, especially pro-environmental values and high levels of altruism, are more likely to engage sustainable behaviour (Stern, 2000). They are also more likely to show higher concern about environmental risks like climate change (Slimak and Dietz, 2006) and are more likely to support climate change mitigation policies (Nilsson et al., 2004).

Values highly influence our actions and the way we see the world. It is important, to study them in order to understand the connection between some major issues such as sustainability, biodiversity loss, hunger and lack of drinking water, human rights, youth exclusion, women's empowerment, racism. Concern and behaviours related to these problems are associated with a set of related values and it is important to understand the way in which the progress on these issues is influenced by education, the media and the society.

For this reason, campaigners promoting sustainable behaviour should, when targeting 'self-enhancing' values, try to promote at the same time personal and cultural values that will make their pro-sustainable behaviour last longer. In order to do so, messages and campaigns need to be properly framed.

Frames as mental structures

Frames are mental structures that order our ideas and can be used as communicative tools that evoke these structures and shape our perceptions and interpretations over time. Frames are also meaningful sets of concepts in our minds gradually learnt through experience and association, strongly linked, and stored in memory. These structures serve as 'frames of reference' for interpreting new information and experience.

The so-called 'deep framing' is something even more substantial. It refers to the connections that are forged between a particular communication strategy or public policy and a set of deeper values or principles (Lakoff, 2004), and allows to link climate change engagement strategies with self-transcendent values (Crompton, 2010). For instance, putting a financial value on endangered species, and building an economic case for their conservation makes the cause more appealing for them. This is a very different frame to one that attempts to achieve the same conservation goals through emphasising the intrinsic value of rare animal species – as something that should be protected in their own right.

All information is ‘framed’ by the context in which it appears, intentionally or unintentionally. This means the individual words and phrases that are used and it is sometimes called ‘conceptual framing’.

Green market

Many pro-environmental behavioural change strategies stress the importance of small and painless steps expecting that, once they have embarked upon these steps, people will become motivated to engage in more significant behavioural changes. Often, these strategies place particular emphasis on the opportunities offered by ‘**green consumption**’ using marketing techniques to encourage the purchase of environmentally friendly products (Crompton, 2009). Thereby, environmental behaviour change may be sold via ‘eco-chic’ for status or opportunities to save cash for the frugal.

Green consumes, are at the bases of marketing strategies for behavioural change, typified by appeals to an individual’s self-interest and the social status that might be derived from the purchase of the latest energy-efficient device.

Many research show how values work: some of them are compatible, likely to be held strongly together while others, such as power and equality, not that much. But the research also shows that even in simply talking to one value, you find yourself talking to a range of related values and suppressing the opposing ones. This means, worryingly, that we try to get people to care more about equality by appealing to their desire for popularity we might have accidentally harmed our own cause.

In addition, focusing pro-environmental behavioural change campaigns on ‘simple and painless steps’ may be a distraction from the approaches that will be needed to create more systemic change. Such emphasis also deflects precious campaign and communication resources from alternative approaches.

It is clear that engaging in simple pro-environmental behaviours such as turning TVs off stand-by or switching from incandescent to compact fluorescent light bulbs can, if undertaken by most of the people, make a notable difference. However, such behaviour is not the right focus for pro-environmental behavioural change strategies. Moreover, the ‘green consumption’ means buying more goods and services, which is an inherent aspect of the consumerism. The scale of environmental challenges the world is facing demands a systemic engagement with this problem.

It is important to promote the adoption of alternative patterns of consumption like car sharing, or keeping and upgrading computers rather than replacing them are important, but these models are unlikely to lead to change on the scale required, without first engaging the underlying motivations for consumerism. If people upgrade their computers and use them for longer but then, they use the money saved to buy another new electronic device, the ‘green consumption’ does not lead to net environmental benefits.

The reasons that make someone adopt a particular behaviour changes have very important implications for the energy and persistence with which these behaviours are pursued. For instance, an individual that decides to sell his car to join car sharing is less inclined to spend the money saved on an additional holiday if he was motivated by environmental reasons and not only economic incentives.

To summarize, individuals who engage in behaviour in pursuit of **‘intrinsic goals’** like of personal growth or community involvement tend to be more highly motivated and more persistent in engaging in this behaviour than individuals motivated by **‘extrinsic goals’** like financial success or social recognition.

Collateral damage of social marketing

Current behaviour-change strategies run by NGO and other environmental organisations are increasingly built upon analogy with product marketing campaigns. Market segmentation techniques are used to characterise different sectors of the target audience according to their willingness to undertake behavioural change. One approach that has recently gained ground is to tailor communications to appeal to the dominant motivations of different segments of the target audience instead of engaging these values directly.

Although this approach has helped by highlighting the importance of understanding motivational differences between different groups and has been successful in achieving some goals, it is also likely to have brought about significant 'collateral damage.' Values seem to become stronger with repeated 'engagement,' and such appeals might be actually reinforcing precisely those values that impede lasting change.

However, appealing to 'self-enhancing' values, as those centred on external approval or power, can be useful in motivating rapid or significant policy changes, and sometimes can outweigh the "collateral damage" they cause. A clear understanding or values is, however, essential to identify and manage these trade-offs effectively. It is important to have a vision of long-term in order to communicate the values necessary to see this behavioural change towards environment.

4.3 Visual communication of climate change

Images are powerful communication tools but they have proven to be something of a sticking point for climate change communicators. This is because for most audiences in industrialised nations, climate change is something vague, abstract and very difficult to visualise.

In Europe, for example, it is difficult to point to any easily visualised impacts of climate change that have already occurred. While the seasons are changing and, like all around the world average temperatures are gradually rising, it is still difficult to detect this without studying the weather and climate carefully.

Representations on what the future impacts of climate change will be have been strongly criticised by climate sceptics for being alarmist. Recently, climate change communication specialists have questioned whether apocalyptic images of major cities underwater or storm surges are actually doing more harm than good.

In order to communicate the effects of climate change already observable in some areas in the world, campaigners have disseminated the industrialized countries with pictures of starving children and polar bears in order to provide visual evidence of the impacts of climate change.

Although these images are real representations of the effects of climate change, they have been also criticized by climate change communication experts as being geographically and, therefore, also psychologically distant from the audience. Put bluntly, why should people in wealthy, industrialised nations care about starving children in Somalia or the plight of polar bears? Certainly some people do, but these are likely to be the people who are already engaged with climate change. Using visual imagery to reach beyond the usual suspects is more difficult.

The use of different images to represent climate change has been carefully studied in order to identify the effect on public concern and perceptions. It has been found that images that induced fear, such as environmental refugees or drowning polar bears, were successful in attracting attention but ineffective at motivating personal engaging with environmental issues (Saffron O'Neill and Sophie Nicholson-Cole, 2009).

Instead, other un-threatening images that linked to people's everyday actions and concerns seemed to be more effective. Showing pictures of normal people engaging in meaningful sustainable behaviours, rather than scaring them with apocalyptic images, is likely to be a more productive way of motivating sustainable behaviour. The dominant alternatives to fear-laden images have been renewable energy and pictures of different weather states but also these show problems (Manzo, 2010). Depicting extreme weather is risky, because no single weather event can be certainly attributed to climate change. Although renewable energy is a positive icon for many in the environmental movement it causes controversy when it comes to place them somewhere. Many people don't want turbines in unspoilt areas or close to their homes.

For these reasons, the best option is to connect on personal level with the public and demonstrate positive mitigation and adaptation actions rather than emphasising the potential impacts of climate change.

The use of 'experiential' learning environments such as interactive simulations, where people can actually see what happen when levels carbon dioxide increase in the atmosphere, has been proposed as a different approach for communicating climate change (Sterman, 2011). Sterman argued that without this kind of interactive learning about climate science, in which ordinary people can experiment with different aspects of climate system in simulations, understanding of climate change will never improve.

A similar initiative is the one available in The Cost of Carbon website, www.thecostofcarbon.org, that allows people to enter their name and location and then pins the results on the site. The infographic puts your location on a world map and then gives you a pie chart of risks; flooding, drought, hurricanes, wildfires, landslides and storm surges. It then links those extreme weather events to how they could affect your livelihood in the future from higher food prices and water scarcity to property damage, loss of wildlife and higher insurance premiums.

4.4 Examples of climate change communication

13 Steps and Guiding principles

In order to communicate effectively the climate change, it is essential to understand and connect with the concerned people. Communicators need to inform the different audiences according to their values and beliefs and provide them with answers that they in turn can communicate to their networks.

EcoAmerica, which aim is to grow the base of popular support for climate solutions in America has published on December 2013 a thirteen step guide that provides with general guidelines to communicate the climate change that work with any audience. They draw on research and real life experience from ecoAmerica and other experts in creating effective programs that engage people on climate change. The first step, however, is to identify and know your target. Conservationists have different concerns than health care professionals or businesspeople.

The following 13 steps have been created to craft an emotionally resonant, personalized and effective message on climate change.

1. Start with people, stay with people. Study the audience and their work and concerns demonstrates respect. It is important to understand what they care about climate change and what are their needs. Starting from their perspective and infuse what they care about throughout the entirety of the communication.

2. Connect on common values. It is not enough to talk about the science of climate change, the causes and the consequences, and what must be done to fight it. Communicators need to make the issue relevant to the audience if they want people to care and act. Connecting on common

values opens up emotional and motivating bonds that humanize the communicator and form the foundation of a productive discussion on climate change.

3. Acknowledge ambivalence. Because not everyone is concerned in the same way about climate change, it is important to allow people to be more comfortable by using a sentence like " Some people are more worried about climate change, and some people are less concerned".

4. Scale from personal to planet. Starting with global catastrophe leads to fatalism, since many people can't see how their actions could address such a big problem. Instead, talking about what is happening around them, and then scale up to other areas of the planet is a much more effective method to keep their attention.

5. Sequence matters. The same set of fix facts, arranged in different ways, end up with very different results. Starting with the impersonal and negative, then it is very hard to get to the positive, personal and relevant. Follow the order: connect with common values, acknowledge ambivalence and scale from personal to planet.

6. Use 'facts', not science. Everybody knows scientists argue and that science can be mutable. Talking about science opens the door to question and debate. It is better to assume the science and talk about facts. People notice that climate and weather are changing, communicators can talk about the warmer summer and droughts.

7. Inspire and empower. The most important thing to do to get people to engage on climate change is to convey a sense of hope and potential. It is possible to fight climate change, it is in everyone's hands.

8. Be solutions focused. People expect practical solutions to the problem of climate change. Overwhelming problems with solutions, presenting five solutions for every problem will quell any feelings of futility and fatalism and at the same time will motivate people on what is possible. It is important to show the path to the solution, but it has to be a path for a better life, not a lesser life. Avoid suggesting sacrifice.

9. Describe, don't label. Labels are code words that bring up others. It has to be avoid the use of abstract words like "alternative energy" to talk about wind and solar power. The most persuasive language is vivid, familiar and descriptive.

10. Have at least 1 powerful fact from a trusted manager. One or two facts with a lot of emotional power can add significant weight to the message. Highly trusted messengers lend credibility and importance. Every audience will trust a different messenger, so it is important to find a different relevant quote from someone trusted by every audience.

11. Prepare, don't adapt. Adaptation is a disempowering term that leads to fatalism and resignation. Because there is nothing we can do, we have to adapt. Preparation, on the other hand, leads to action. There is a problem that we can do something about.

12. Speak from the mountaintops, don't fight from the trenches. It is important to focus on the big picture, on what's important, on working together to achieve common good. Arguing details turns off your audience and distracts from the important point. Whether the drought is the worst or the second worst ever is not the point. The point is the trend, the big issue, and the solutions.

13. Message discipline is critical. Simple messages, repeated often, by trusted messengers are powerful. Following the rules above, being consistent, and not being afraid of repeating critical points are crucial for an effective communication. Explaining the same thing in different ways may be more confusing than it is enabling.

Every communicator can address to any audience using this guideline. This guide adopts, at some points, the social marketing approach in order to reach the audience in a more effectively way. However, the aim is to induce a pro-environmental behavioural change by meeting the interests and concerns of a specific audience and offering them big solutions for big problems.

Enhancing Climate Change Communication Strategies for Profiling and Targeting Australian Interpretive Communities

Like in every Country or region, people vary considerably in their perceptions of climate change, as well as in their responses to the issue. In order to address this diversity, it is important to know the audience and tailor the message of climate change adaptation to suit them (Moser and Dilling, 2004, Whitmarsh et al. 2011). The way a message is perceived is strongly influenced by the characteristics of the audience. For instance, a message that expect to elicit adaptive responses from individuals who accept climate change may not motivate people who think that climate change is not occurring. Mismatches between messages and target audiences may even lead to boomerang effects, phenomenon in which messages elicit responses that are opposite to those intended (Byrne and Hart, 2009).

The National Climate Change adaptation Research Facility in Australia conducted a research and between 2010 and 2012 and published the report 'Enhancing Climate Change Communication Strategies for Profiling and Targeting Australian Interpretive Communities' in 2013.

The aim was to provide practical information about how to design communications on climate change adaptation and target these to the Australian population. This was achieved through the identification of different climate change audiences in Australia in order to increase the awareness within them. Afterwards, they how each audience responded to different types of climate change messages.

The first phase of the study used audience segmentation analysis, a marketing method, to identify the main climate change interpretive communities within Australia, that is groups of people who share similar views, concerns and attitudes about climate change. Two analyses were conducted on data collected from two Australian samples in 2010 and 2012. The aim was to identify prominent climate change interpretive communities that exhibited similar psychological characteristics at both time points.

A nationwide sample consisting of 3,096 Australian residents (aged 15 to 108 years, 47% male and 53% female) completed an online survey assessing a broad range of psychological, geographical and demographical variables relevant to climate change adaptation and behavioural factors related to climate change (Reser et al. 2011).

Then, profile analysis applied to the psychological variables suggested that this sample comprised of five distinct interpretive communities: Alarmed (26%), Concerned (39%), Uncertain (14%), Doubtful (12%), and Dismissive (9%). Validation analyses revealed that these groups differed in terms of how they responded to perceived climate change threats, and also in their support for particular climate change mitigation and adaptation policies.

In the second phase of the project, they examined how Australian interpretive communities responded to climate change adaptation messages and identified the specific message attributes that drive these responses. In order to do so, 1,031 Australian residents completed an online survey assessing a similar set of psychological and behavioural responses to climate change to those assessed in the first phase. Three interpretive communities were identified in this sample: Dismissive, Uncommitted, and Alarmed.

They then investigated which attributes of climate change adaptation messages produced adaptive and maladaptive responses from the three interpretive communities (Cooksey, 1996, Hammond et al. 1975). Respondents viewed a set of messages, sourced from the internet, which promoted adoption of a particular adaptation response to possible effects of climate change. The messages were pre-coded on ten message characteristics suggested by the climate change and social marketing literature (e.g. emotion vs. reason, social norms, language complexity; Spence and Pidgeon, 2010, Griskevicius et al. 2008, Chaudhuri, 2002). Respondents then rated them on four judgement dimensions (Witte's (1992) Extended Parallel Processing Model (EPPM): perceived threat, perceived efficacy, fear control (message rejection), and danger control (message acceptance).

Consistent with predictions of the Extended Parallel Processing Model, members of all audience segments tended to accept better messages that they considered to be highly threatening and to contained advice about effective and personally achievable ways to manage the threat (high efficacy).

Moreover, it was found that unique combinations of message attributes could to predict each interpretive community's responses to the set of climate change communications.

In terms of specific message characteristics, NCCARF results indicate that:

• Messages for Dismissive respondents may be most effective when they use simple language, provide specific advice about how to adapt to climate change threats, and avoid descriptions about how 'typical' Australians adapt (descriptive normative feedback) in the absence of clear statements describing how they should adapt (injunctive norms).

• For Uncommitted Australians, messages tended to be more effective if they included a strong emotional component, were framed in terms of preventing losses, and included specific advice about how to adapt to climate change threats.

• Messages for the Alarmed interpretive community may be most effective if messages emphasise local impacts and collective responsibility, and convey specific adaptation advice.

The results suggest that climate change adaptation messages should be tailored to suit different climate change interpretive communities, with message attributes being matched with audience characteristics to maximise impact.

Following, a table containing a summary of the characteristics of the Australian Climate Change Interpretive Communities, along with effective message characteristics and messaging options for each group.

Summary of Australian Climate Change Interpretive Communities: Psychological Characteristics, Effective Message Characteristics, and Messaging Options

Group	Characteristics	Effective Messages	Messaging Options
Dismissive 20%	• Very low belief in climate change • Effects perceived to be remote in space and time • Very low distress, concern, perceived risk, environmental values, trust in authorities, and self-efficacy • Low outrage and knowledge • Negative attitudes toward clean energy	• Use simple language • Do not include information about how most Australians currently adapt to climate change threats (descriptive norms) in the absence of information about how they should adapt (injunctive norms) • Provide specific advice about what actions to take	• Avoid direct references to climate change and sustainability •Develop strategies that emphasise other valued outcomes (e.g. economic development or a caring society)
Uncommitted 45%	• Moderate belief in climate change • Effects perceived as moderately close in space and time • Moderate distress, concern, perceived risk, attitudes toward clean energy, trust in authorities, and self-efficacy • Moderately low outrage, environmental values, and knowledge	• Have a strong emotional component • Are framed in terms of preventing losses • Provide specific advice about what actions to take	• Provide motivational messages to increase self-efficacy and concern
Alarmed 34%	• Strong belief in climate change • Effects perceived as imminent • High distress, outrage, concern, perceived risk, knowledge, and self-efficacy • Strong environmental values, trust in climate change authorities, and attitudes toward clean energy	• Emphasise local impacts • Emphasise collective responsibility • Provide specific adaptation advice about what actions to take	• Provide information about – effective ways to adapt to climate change threats – how to lobby industry and government – where to access relevant means and resources • Remove structural barriers preventing translation from intention into action • Provide feedback that climate change views are shared by others

Note: The interpretive communities described in this table are based on the audience segmentation findings from Phase 2 of the project. The Phase 2 sample did not match the demographic characteristics of the Australian population. Thus, the percentages in the table should not be interpreted as reflecting the proportion of Australians who are dismissive, uncommitted, and alarmed about climate change.

4.5 Online resources for an effective communication on climate change

There are dozens of resources available online that provide either general advice about communicating climate change, specific advice about influencing particular sustainable behaviours, or focus on the challenges of getting climate science across clearly. The followings are key resources that can be useful for anyone interested in communicating climate change.

Carbon Brief, the climate change media organisation, has a very readable guide to what is known and what is not known about climate change science, and provides a regular 'fact checking' service of climate change media reports. Their website also contains excellent profiles of key actors in the climate change debate – from scientists to sceptics – as well as many other useful resources.

The Centre for Research on Environmental Decisions (CRED) at Columbia University published a guide to the psychology of climate change communication in 2009 that they describe as being written for scientists, journalists, political aides and the interested public. Clear and well written, it translates complex topics into simple messages. It talks about several different aspects of climate change communication, from scientific uncertainty, to the importance of engaging people in groups to have the most impact on behaviour.

Climate Access is a very useful collection of resources for a broad range of climate change communication activities. It launched in 2011 in the US, and it takes a similar approach to Talking Climate in that it seeks to round-up and share good examples of climate change communication resources. It offers a Resource Hub where existing reports can be accessed, a Campaign Gallery featuring examples of campaigns related to climate change and sustainability, a 'members only' section where practitioners and researchers can discuss the latest research in a secure forum, and 'tip sheets' on different aspects of climate change communication.

Climate Communication is a recently launched US initiative to publicise climate change science, assist journalists and support scientists. It has some nice interactive tools on different aspects of climate change science.

Climate Crossroads is a guide – unusually based on actual research, rather than a summary of others' research – that aims to apply what is known about effective 'framing' techniques to messages about global warming. It contains some valuable insights about the sort of language and terminology that is likely to make or break a campaign, although is oriented quite strongly towards a US audience.

Climate Science Explained. Green Alliance has recently produced a short '3 page' briefing on climate science, again aimed primarily at politicians. It is a concise and well-referenced overview of the state of knowledge about climate science, easier to digest but less detailed than the Royal Society summary of the latest climate science.

Climate Science Rapid Response Team is a service for journalists and policymakers that provides access to expert scientists.

Climate Wisconsin is an innovative approach to communicating climate change. It is an educational multimedia project featuring stories about climate change, told through videos of ordinary people who are being affected by climate change across the state of Wisconsin in the US.

Common Cause. On behalf of a coalition of NGOs, Tom Crompton published a report last year called 'Common Cause: the case for working with our cultural values'. This argues that social marketing techniques which focus on changing one particular behaviour at a time will not

produce sufficiently radical change, suggesting that instead we need to shift the values and 'deep frames' governing society.

Community Based Social Marketing. The website for the Community Based Social Marketing programme in the US is run by Doug McKenzie Mohr, who has produced a lot of work on applying social marketing strategies at the community level.

ecoAmerica published the results of audience research they conducted in the US trialling different ways of presenting climate change and energy messages. The report is short and easy to under- stand, and contains important pointers for developing language and messages that don't make people 'switch off'. It is especially useful for spoken communication – the research involved playing people recordings of actors reading our different messages, which the audience then rated in 'real time'. This methodology may offer a particularly promising way of improving climate change communication, but has not yet been used widely.

Green Living Blog. Green Alliance has a regularly updated blog that is dedicated to 'green living'. The blog hosts original posts from experts on sustainable behaviour and climate change communication in general, as well as providing updates about new developments in the field.

The Guardian newspaper has an excellent section on its website dedicated to providing clear and concise answers to the most frequently asked questions about climate science.

From Hot Air to Happy Endings . Green Alliance published a report in 2010 called From Hot Air to Happy Endings – How to inspire public support for low carbon policies. The report features contributions from a wide range of experts on inspiring public support for tackling climate change. It is aimed at politicians, but is well written and edited so also appeals to a wider audience. It is not really a practical guide – more of a space for new thinking.

New Scientist magazine has a guide to what is known and unknown about climate change science.

Realclimate is written by climate scientists, and deals with scientific topics and issues currently reported by the mainstream media. It is a popular website, but fairly technical.

Selling Sustainability. Although it is now a few years old, the Selling Sustainability report by NESTA is still a good summary of the social marketing approach to behaviour change, building its arguments on the much more extensive literature on social marketing for health behaviour initiatives.

Sell the Sizzle. Futerra are communications consultants who focus on corporate responsibility and sustainability, but who have also done a lot of work with the UK government. They have produced a number of reports that apply insights from social marketing to corporate and government sustainability communication challenges, including the short, snappy Rules of the Game and the more recent Sell the Sizzle.

Skeptical Science. Dozens of well-constructed arguments and counter-arguments to common sceptical positions are contained in Skeptical Science, run by the Australian John Cook. One of Skeptical Science's most popular publications is a downloadable 'debunking handbook' taking on some of the most common sceptical arguments.

WWF reports. Through its programme Strategies for Change, the WWF (and Change Strategist Tom Crompton in particular) has released a series of important and influential reports that have helped to redefine communication about climate change and the environment more generally. The first report, Weathercocks & Signposts: The Environment Movement at a Crossroads, provided a powerful critique of the 'social marketing' approach to behaviour change, and

introduced the idea that campaigns should instead be based on values. The next report, Simple & painless? The limitations of Spillover in Environmental Campaigning, examines the evidence that 'small steps' will lead to positive 'spillover' into more substantial sustainable behaviour. Finally, a downloadable book on the role of human identity in meeting environmental challenges contains a number of important insights about how to go beyond focusing on specific behaviours and think more in terms of people's identities and lifestyles. They are all excellent resources – although more in terms of progressive thinking than practical guidance.

The Yale Project on Climate Communication is a good resource for a range of climate change communication challenges. It includes useful information on climate change in the media, examples of 'outreach' projects in the US and selected academic publications on climate change communication.

5. Conclusions

Research has demonstrated that scepticism is not a matter of scientific knowledge anymore. Of course, scientific illiteracy can lead to misunderstanding the climate change science, but it has been proved that there are other factors that contribute to the scepticism of climate change. The political ideology tends to have a strong influence in people's position about the issue. In the same way, the political perspective of a media organisation influences the way the message of climate change is communicated. For that reason, the source of the message is also very important. The media exaggeration of climate change and the so-called 'balance by bias' of the coverage of the issue, have negatively affected the public perception of climate change favouring sceptic positions.

However, other factors such as an increasing focus on economics rather than environmental issues and an overexposure to the topic may have helped to distract people from climate change and its effects.

Campaigns conducted by fuel companies, conservative think tanks and other business groups used to undermine scientific evidence on the existence and importance of climate change, have also been causing an increase of scepticism and disinformation, especially in the English-speaking world. As a consequence of this disinformation, in 2006 majorities in Europe and japan recognized a broad consensus among climate experts about anthropogenic climate change, while in the US only one third considered human activity to play a major role in climate change and 64% believed that scientists disagreed "a lot".

Many approaches exist to communicate climate change. While communicational strategies based in social marketing can be successful in achieving goals in a short time, it is also likely to cause a collateral damage by promoting the kind of not long-lasting behavioural change. Other approaches based on reinforcing the values that lead to a durable behavioural change and not focused in promoting green consumption may take more time and resources but can be more successful in engaging people in a sustainable behaviour.

Visual communication of climate change is an important tool that needs to be used correctly in order to avoid pessimist visions of the climate change that distance people instead of engaging them. Images of normal people engaging meaningful sustainable behaviours is likely to be a more productive way of motivating sustainable behaviour. The use of 'experiential' learning environments, such as interactive simulations where people can actually see what happen when levels carbon dioxide increase in the atmosphere, can be used to increase the understanding of climate change.

Finally, the use of the social marketing approach to communicate climate change has highlighted the importance of understanding motivational differences between different groups. It is crucial that communicators study their audience in order to understand their needs and concerns and connect with them. Since promoting 'simple and painless' steps has not shown to motivate people to engage in more significant behavioural changes, communicators should try with giving big solutions according to their audience's needs and concerns.

Taking into account all the things mentioned in this essay, climate change communication needs to be improved by using new approaches, promoting sustainable values and trying new methods in order to increase the public engagement in long-lasting sustainable behaviours. Only citizens who care about sustainable development can make pressure on policy makers to take big decisions that ensure a sustainable future for humanity.

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