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**Increasing public awareness and facilitating behavior change:  
Two guiding heuristics**

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## **Increasing public awareness and facilitating behavior change: Two guiding heuristics**

*Note: This essay builds on two previously published essays by the author (Maibach, 2015a, 2015b).*

“Everything should be made as simple as possible, but no simpler.”  
– Quote commonly attributed to Albert Einstein

If there is a single aspiration that unifies the professionals who work on the challenges associated with climate change and biodiversity, it is likely their desire to see policy makers, business managers and members of the public make decisions that are better informed by the realities of what we know about how to stabilize the climate, conserve biodiversity, and prevent needless harm to people and eco-systems. And if there is a single emotion that unifies them, it is likely angst – as a result of feeling that, collectively, we are falling far short of our aspirations.

This calls an obvious question: *What can we do more effectively to promote wise decision-making and actions by important decision-makers?* Many excellent books (Hornik, 2002; Moser & Dilling, 2007; Whitmarsh, O’Neill & Lorenzoni, 2011; McKenzie-Mohr, 2011; Crow & Boykoff, 2014; Marshall, 2014) and articles (Maibach, Abrams & Marosits, 2007; Holmes and Clark, 2008; Ryder et al, 2010) offer important insights and partial answers to the question, but none of these offer a simple, clear answer that working scientists – and science institutions – will find to be practical.

In this chapter I offer my best shot at a practical answer. It is by no means the only answer, or the definitive answer, but it is – by design – the simplest answer I can offer while still staying true to the best available evidence on the science of science communication. Moreover, my answer is intended to be equally helpful both to individual scientists – in any relevant discipline, at any stage in her or his career – and to the full range of science and science-based institutions that strive to share current scientific insights about the physical world with decision-makers and the public (such as the National Academy of Science, National Science Foundation, professional societies, science museums, media producers, etc.).

My answer also aims to be useful regardless of which category of “important decision-makers” are most relevant in a given situation – community leaders, national leaders, business leaders, people in a specific profession (e.g., building contractors), or even individuals and families who are trying to manage their own lives in the best possible manner. All of these people have important climate- and biodiversity-related decisions to make, whether they currently know it or not. Individual scientists, and the scientific community, can be of value in helping these people make wise decisions and take wise actions.

The question posed above includes two related yet distinct challenges. The first challenge is helping decision-makers make wise decisions; the second challenge is helping them take wise actions. To help people make wise decisions, we must effectively bring the issue to their attention, suggest the need to make decisions, clarify the nature of the problems and opportunities, and make available the best science-based information – in appropriate formats – for decision-makers to consider. In short, we must effectively share what we know.

Helping people take wise actions involves a different set of activities. If it were easy for people to convert their good decisions (i.e., their good intentions) into effective actions, the proverb “the road to hell is paved with good intentions” would never have arisen. Fortunately, steps can be taken to help people convert their good intentions into effective actions.

My answer to the question above, therefore, has two parts. To effectively share what we know, we need “*simple clear messages, repeated often, by a variety of trusted sources.*” To help people convert their good intentions into effective actions, we need to do everything we can to “*make the behaviors we are promoting easy, fun and popular.*” I refer to each of these as “heuristics” in the sense that they organize a relatively large amount of prescriptive information into a relatively easy to use method or process.

In the remainder of this chapter, I unpack these two heuristics, with the aim of making them practical for all readers. I assume that most readers of this chapter will be scientists and allied professionals – and I therefore tailor my comments to them – but the recommendations are equally relevant to anyone seeking to improve climate change and biodiversity outcomes in ways that are grounded in scientific evidence.

## **Sharing What We Know**

Scientists are highly trained to share what they know, but primarily to colleagues in their own scientific discipline. Typically, this process begins with our research, where we develop and test ideas. If an idea proves to have merit, we take steps to share it with our colleagues – at professional meetings, in journal articles, and in books. Perhaps, if we are really excited by the idea, we might make extra efforts to share it more broadly – possibly with scientists in other disciplines (e.g., by giving talks at their meetings) or with the general public (e.g., by working with our institution’s press office to issue a press release), although these efforts tend to be fleeting. These approaches to sharing what we know work reasonably well with colleagues in our own discipline, less well with scientists in other disciplines, and not well enough with policy makers, business leaders, and members of the public. Metaphorically, these approaches are akin to tossing what we know “over the transom” or out the window of our lab, and into the outside world, expecting relevant people to pick up our knowledge, consider it, and know what to do with it.

There is a better way: *simple clear messages, repeated often, by a variety of trusted sources.* It isn’t a “magic bullet,” and it won’t solve our biodiversity and climate challenges overnight (or anytime soon), but the approach is evidence-based (it is based in the science of science

communication), reasonably easy (once you understand it, it's no harder than what you are already doing), and ethical (it involves providing people with information they are likely to find helpful). The heuristic itself has three elements – simple messages, message repetition, and trusted messengers – each of which is based on empirical evidence and offers practical guidance.

*The importance of message simplicity:* Most people, in most situations, don't deal well with complex information; complex information is cognitively taxing, and most people (even very bright people), in most situations, are unwilling to make the effort. Instead, people typically use mental shortcuts to avoid cognitively difficult tasks, and when they do, they often end up reaching conclusions that differ from those intended by the information provider (Kahneman, 2011). Risk communication expert Baruch Fischhoff (1989) trenchantly summarized the situation – and his prescription about how best to manage it – in the following manner: "People simplify. Our job (as risk and science communicators) is to help people simplify appropriately."

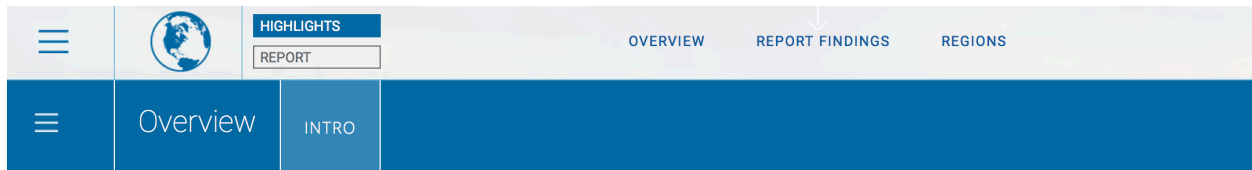
So, what can we – as communicators – do to help people simplify appropriately? We can develop "messages" about the information we wish to share that are specifically intended to help people simplify complex information appropriately. (For readers who disfavor the term "messages" – equating it to persuasive intent – the term "brief statements" is an acceptable synonym.) "Audience research" is a powerful tool for developing such messages. Through audience research, we can systematically collect data to assess audience members' pre-existing knowledge, attitudes and values, and test their responses to draft messages. In this manner, we stand a much better chance of designing messages that illuminate, rather than messages that alienate. Admittedly, the conduct of audience research isn't always feasible (perhaps because of lack of time, funds, or expertise), but that is not an excuse for failure to seriously consider how members of the target audience are likely to understand the information we wish to share with them. Making the effort to consider our audience members' views – and values – is helpful in that it forces us as communicators to look beyond ourselves, and to think carefully about both what is most worth saying, and how best to say it.

An approach that all science communicators can use to improve their messages involves anticipating the questions that people are likely to ask, and drafting messages that attempt to proactively answer those questions. For example, when the issue pertains to a risk people are likely to ask some variation of the following questions: What is the problem? How will it affect me (and my people)? How serious is it? Who or what is causing the problem? What are the options for dealing with it? What, if anything, can I do about it?

To test your success in drafting simple clear messages in response to likely audience questions, share the messages with a few members of your target audience, one person at a time. After each person has had a chance to consider your messages, ask them to explain – in their own words – what the messages mean to them, and how they would explain them to a friend. Also ask: "What questions, if any, do you have for me about this information?" When members of your audience can adequately explain your messages in their own words,

and when your messages help them ask good questions, you've succeeded in writing simple, clear messages.

The 3<sup>rd</sup> U.S. National Climate Assessment (NCA3) provides a useful example of simple clear messages (Melillo, Richmond & Yohe, 2014). Although the full report is over 1,000 pages, NCA3 each set of chapter authors was asked to identify key messages for their chapter. In addition, the federal advisory committee that oversaw the development of NCA3 developed key messages for the report as a whole. Authors and advisory committee members were well aware of audience research showing that most Americans understand climate change is happening, but they see it as a distant threat – distant in space (i.e., the problems will primarily manifest elsewhere, not here in the United States), distant in time (i.e., the problems will start in the future, they aren't happening yet), and distant from humans (i.e., the problems will be primarily felt by plants, penguins and polar bears – not people; Leiserowitz, 2005; Leiserowitz, et al. 2014a; Leiserowitz, et al. 2014b). As a result, NCA authors developed key messages intended to correct the misperception of climate change as a distant threat. The opening words on the NCA3 report website are: “...*(T)he National Climate Assessment provides an in-depth look at climate change impacts on the U.S. It details the multitude of ways climate change is already affecting and will increasingly affect the lives of Americans. Explore how climate change affects you and your family.*” This theme is also clearly in evidence in the report's introduction (see Figure 1). These opening words, the report's key messages, and even the chapter names (e.g., extreme weather, human health, water, agriculture, oceans) were all intended to help all readers – even those giving the information only a quick glance – to understanding the most important, overarching, finding of the assessment: *climate change is happening here, now, in every region of America.*



## Introduction

Climate change, once considered an issue for a distant future, has moved firmly into the present. Corn producers in Iowa, oyster growers in Washington State, and maple syrup producers in Vermont are all observing climate-related changes that are outside of recent experience. So, too, are coastal planners in Florida, water managers in the arid Southwest, city dwellers from Phoenix to New York, and Native Peoples on tribal lands from Louisiana to Alaska. This National Climate Assessment concludes that the evidence of human-induced climate change continues to strengthen and that impacts are increasing across the country.

Americans are noticing changes all around them. Summers are longer and hotter, and extended periods of unusual heat last longer than any living American has ever experienced. Winters are generally shorter and warmer. Rain comes in heavier downpours. People are seeing changes in the length and severity of seasonal allergies, the plant varieties that thrive in their gardens, and the kinds of birds they see in any particular month in their neighborhoods.

### **Figure 1: The opening paragraphs of the 3<sup>rd</sup> U.S. National Climate Assessment**

*The importance of message repetition:* That “repetition is the mother of all learning” – which comes to us originally from an ancient Latin proverb (*repetitio est mater studiorum*) – is one of the most robust findings to have ever emerged from mass communication research (Lang, 2013). Repetition increases message persuasiveness cognitively (by increasing salience and availability of the information) and affectively (by increasing positive feelings about the message) (Batra & Ray, 1986; Pechman & Stewart, 1988; Chong & Druckman, 2013). While truthfulness is of paramount importance in science communication, truthful messages amount to little without adequate message repetition, a point nicely illustrated this quote from a political consultant: “You take the truth, and I’ll take repetition; I’ll beat you every time” (Castellanos, 2010).

The importance of message repetition is something that every politician learns in her first political campaign, and every business executive learns in his first marketing course, but it is a lesson rarely taught to scientists. Admittedly, repetition is boring to most communicators, especially scientists. As scientists, novelty, innovation and controversy is what excites us – and what we like to talk about – but what excites us is not a relevant consideration in determining how best to share what we know with decision-makers. Moreover, like all people, scientists suffer the “curse of knowledge” (Heath & Heath, 2007); we forget that most people don’t know what we know, and as a result we end up making assumptions in our communication that inadvertently excludes the very people we are

seeking to share our knowledge with. The discipline of message repetition – repeating the messages that we have designed for the express purpose of helping audience members simplify appropriately – forces us to stay true to our plan for sharing the information that is most helpful to members of our target audience (rather than sharing the information that most interests us).

Fortunately, message repetition is not the sole burden of any one individual or organization; message repetition works best when many different messengers repeat the same set of messages, consistently, over time. Individuals and organizations working on climate change and biodiversity issues should develop the discipline to work together to design, use, and repeat – at every communication opportunity – a shared set of messages specifically intended to help audience members reach appropriate conclusions about the complex problems you are urging them to engage with.

Reach – i.e., reaching members of your intended target – is an important consideration too. Messages that are repeated often, but fail to reach their intended audience, will have no benefit for that audience. Consumer brands typically strive to achieve both message reach and frequency with a combination of paid advertising, earned media (i.e., outreach to news media and bloggers), social media, endorsements, paid placements, and other means. Climate change and biodiversity professionals – and organizations – rarely have the opportunity to achieve reach through paid placements (e.g., advertising), but through the kind of collaboration suggested in the paragraph above, they can strive to maximize both message reach and frequency (i.e., repetition), especially to the extent that they succeed in bringing other trusted messengers into the communication mix. For further elaboration of this important idea, read on.

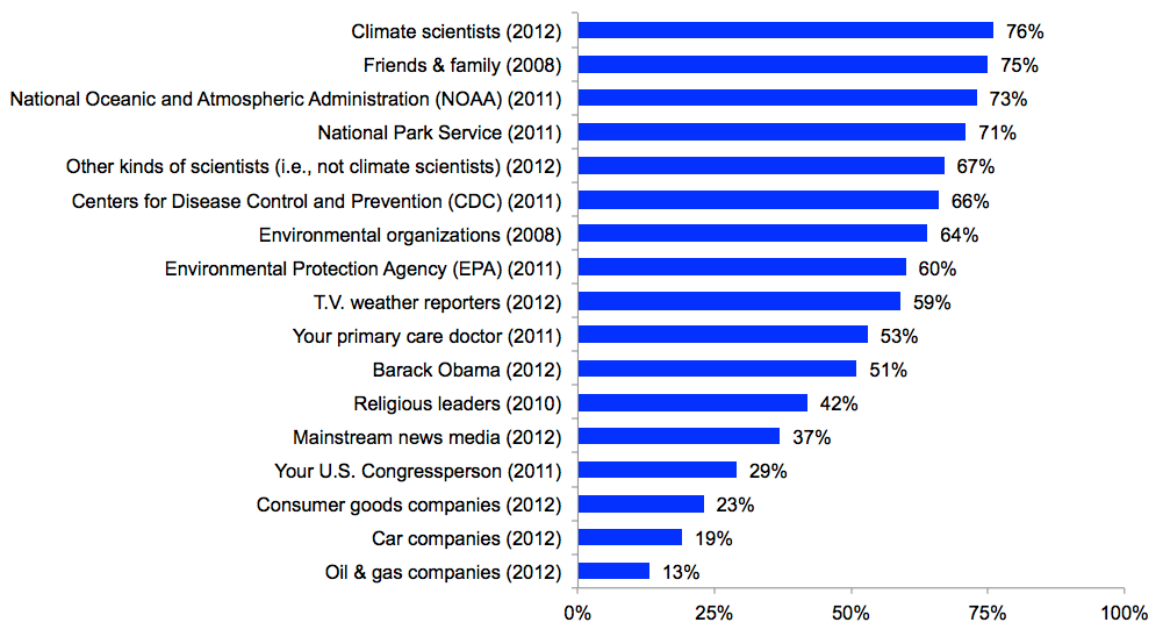
*The importance of trusted messengers:* Quite simply, where there is no trust, there can be no learning. As a group, scientists are highly trusted. For example, scientists are trusted “a lot” by two-thirds of American adults – tied with medical doctors, and second only to members of the military and teachers (Pew Research Center, 2013). However, when target audience members don't know the specific scientist who is attempting to communicate with them – personally, or by reputation – their trust in that messenger is likely to be superficial, provisional and vulnerable, and communication mistakes (such as unclear messages, seemingly evasive answers, and lack of empathy) can rapidly undermine trust (Covello, 2015).

Climate change and biodiversity communicators can earn the trust of their target, and leverage the impact of their communication, by recruiting additional trusted voices – people who are known by the target audience, personally or by reputation – to embrace, repeat and thereby validate their simple clear messages. These additional trusted voices need not necessarily be from the science community. Indeed, we can and should cultivate communication partnerships with individuals and organizations outside the realm of climate change and biodiversity who are highly trusted by members of our audience – for example, leaders in the faith community, or the business community – because doing so is a way of demonstrating one's trustworthiness, and of maximizing one's message reach and frequency.

The most effective endorsements come for people that our target audience trusts the most, regardless of their level of expertise. On the issue of climate change, for example, people typically trust most the people they know the best – their family members, friends, and co-workers – see Figure 2 (Leiserowitz, Maibach & Roser-Renouf, 2009). Scientists are highly trusted too, but it is the rare individual who places greater trust in a scientist (whom he or she has never met) than in one’s own family and friends. This is precisely why the best test of the simplicity and clarity of a science-based message is whether members of the target audience are willing and able to convey the message to their family, friends and co-workers. Ultimately, that should be the aim of our communication – to motivate and enable members of our target audience to share our messages with one another.

### Americans Trust Climate Scientists, Friends & Family Most As Sources Of Information About Global Warming

- % of Americans who strongly or somewhat trust... -



How much do you trust or distrust the following as a source of information about global warming?

Base: Americans 18+.



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**Figure 2. Americans trust in various possible sources of information about global warming.** Note: Data from Yale/George Mason University Climate Change in the American Mind surveys conducted between 2008 and 2012.

Feeling overwhelmed at the prospect of designing and communicating *simple clear messages, repeated often, by a variety of trusted sources*? Don’t be. In his article “Communicating about Matters of Greatest Urgency: Climate Change,” Baruch Fischhoff (2007) made a strong case for improving the effectiveness of science communication by



approaching it as a team sport, rather than as solo sport in which every scientist is expected master the art and science of communication. Specifically, Fischhoff encourages the development of science communication teams that include three distinct types of expertise, which can be provided by a minimum of three people: a content scientist (i.e., a person with expertise on the risk or the issue); a social scientist (i.e., a person with expertise on how people process information); and a communication practitioner (i.e., a person who knows how to create communication opportunities). These three types of professionals each bring unique knowledge and skills to the process of developing simple clear messages, and in working to ensure that those messages are conveyed often, by a variety of trusted sources.

By way of example, I (as a social scientist) helped organize a team of climate scientists, social scientists and communication practitioners at various universities (George Mason and Yale), non-profit organizations (Climate Central, American Meteorological Society), and government agencies (NOAA, NASA) to develop and distribute to TV weathercasters broadcast-quality materials with the aim of helping them report on the local impacts of climate change in their area. Called *Climate Matters*, the collaboration started with a successful pilot test at a single TV station in Columbia, SC (Zhao, et al. 2014), and has now grown into a national network with over 260 participating weathercasters, and growing (Placky et al, in press).

In addition to sustained collaborations, as described in the *Climate Matters* example above (and below), this team-based approach to science communication is also practical for ad-hoc communication opportunities. For example, climate scientists – who will soon be publishing findings with important implications for decision-makers – can ask a social science colleague, and a member of the media relations team at their institution, to help them craft messages, and develop and implement a communication plan through which to communicate the messages.

## **Influencing Behavior**

Effective communication is important, although it is often not sufficient to change people's behavior (Hornik, 2002; McKenzie-Mohr, 2011). Even after people decide to take action, many won't, or won't persevere long enough to succeed. Consider, for example, your most recent New Year's resolution.

Social marketing – the use of marketing methods to promote behaviors that benefit society – is a method developed specifically to help address this problem (Maibach, Rothschild & Novelli, 2002). Many excellent texts lay bare the principles of social marketing, including two that specifically explore its application to environmental challenges (McKenzie-Mohr, 2011; McKenzie-Mohr, Lee, Schultz & Kotler, 2012). I particularly encourage readers of this chapter, however, to watch a TED talk by Bill Smith (2011) -- one of social marketing's pioneers. In his talk, Smith lays out a simple heuristic to guide the implementation of social marketing programs: *make the behavior you are promoting easy, fun and popular*. Although it sounds cheeky, the heuristic is based on a large body of empirical research, and it offers important, practical guidance.

*The importance of making the behavior easy:* Social scientists have long known that there is often a large gap between people's attitudes toward a behavior (e.g., vegetables are very good for you) and their behavior (e.g., "I'll have the cheeseburger and fries, please"). One of the most effective means of reducing this "attitude-behavior" gap is to make the recommended behavior easier to perform (e.g., "Would you like carrot sticks, an apple or fries with your burger?").

People are likely to perform easy behaviors they believe to be in their best interest, but they often defer – and never get around to – behaviors they find to be more difficult. To save money on utility bills, for example, a homeowner may switch her lights over time from incandescent bulbs to LEDs (because doing so is relatively easy), but may not take steps to weatherize her home (because doing so is harder) despite the fact that the cost savings from the latter are considerably larger.

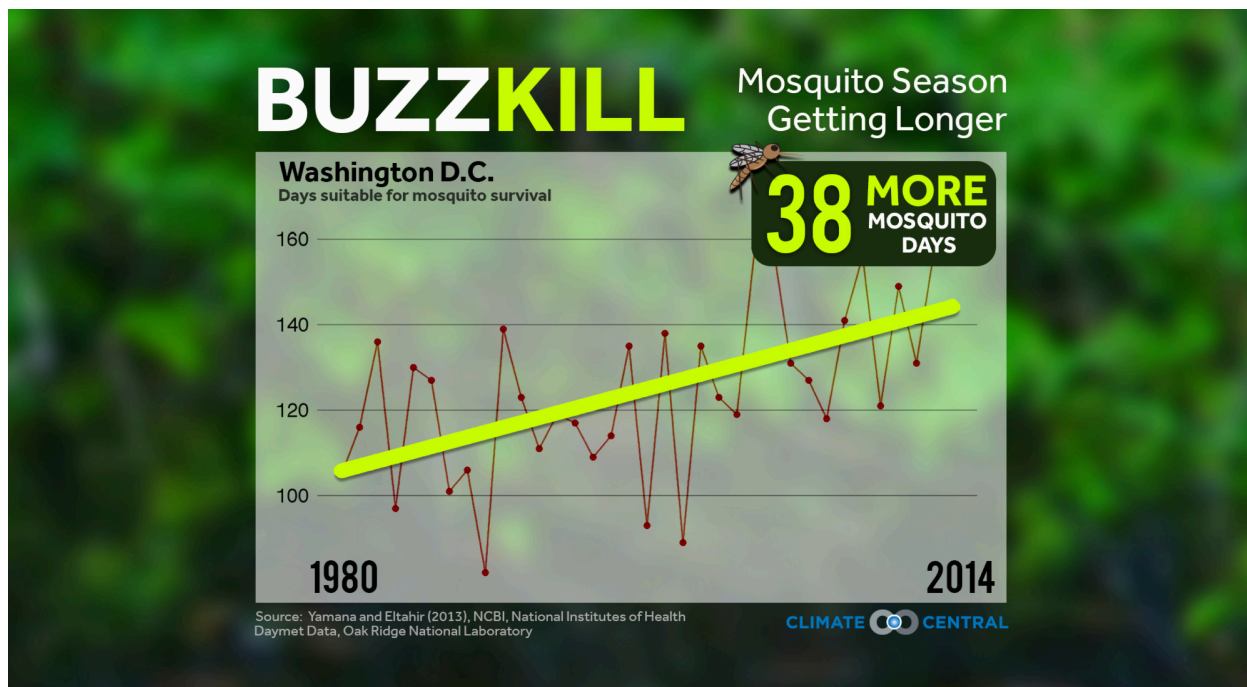
Many important actions aren't easy to perform. Steps can be taken, however, to make them easier to perform. In his excellent book *Fostering Sustainable Behavior*, Doug McKenzie-Mohr (2011) recommends taking an engineering-like approach to the task of making behaviors easier. The first step in the process is to conduct audience research for the purpose of identifying the barriers that impede people's performance of a behavior whose value they are already convinced. These barriers might include a lack of knowledge about how to perform the action (e.g., "I can't remember which kinds of fish are sustainable"), a lack of skills necessary to perform the behavior well (e.g., "I don't know how to cook that kind of fish"), a lack of necessary resources (e.g., "Sustainably caught fish is too expensive."), concern about the negative consequences of performing the behavior incorrectly (e.g., "My kids won't eat it if they don't like it"), and so on.

The next step in McKenzie-Mohr's approach is to develop and pilot test ways of reducing – or ideally eliminating – the barriers found to be particularly common. The Seafood Watch app developed by the Monterey Bay Aquarium is a good example of a program intended to reduce at least one barrier to purchasing sustainably-caught fish – not knowing which fish are sustainably caught. If the pilot-test results are promising, efforts can be made to encourage widespread adoption of the approach. The Marine Stewardship Council's Certified Sustainable Seafood program is an example of a program that has achieved considerable success through adoption by large food companies and retailers.

Another important way to make behaviors easier is to have members of the target audience demonstrate – to other audience members – how they perform the behavior, live or on video (Bandura, 2004). Modeling demonstrations of this type are particularly effective when the models make explicit the necessary steps to perform the behavior successfully, the pitfalls to avoid, and the benefits of performing the behavior. Both of these approaches – reducing barriers and modeling the behavior – will increase people's sense of self-efficacy (self-confidence) to perform the recommended action, which increases the odds that people will try, persevere and eventually succeed in performing the behavior (Bandura, 2004).

In their terrific book *Switch*, Chip and Dan Heath (2010) lay out a host of practical ways to make behavior change easier, and to make behavior change programs more successful. Drawing on the metaphor of a rider (to represent people’s thoughts), an elephant (to represent people’s emotions), and their path (to represent the social and physical environment in which people are operating), the Heaths recommend setting a clear (i.e., unambiguous) goal, charting milestones so that progress made toward the goal will be positively reinforcing, and “tweaking the environment” (i.e., modifying or removing personal, social or environmental barriers to performance of the behavior).

The *Climate Matters* program provides an example of how my colleagues and I have sought to make behavior change easier for TV weathercasters. Our audience research with weathercasters identified several key barriers to their ability to report on local climate change impacts stories, including: lack of time to prepare stories; lack of access to data on local impacts; and lack of access to appropriate graphics and visuals to support their reporting. In response, to make the recommended behavior easier for weathercasters, each week our team produces and distributes broadcast-quality graphics, customized to each participating weathercasters’ media market, that often feature data on the local impacts of climate change in their area; see Figure 3 for an example. [Note: All current and past *Climate Matters* materials are available online at [www.climatecentral.org/climate-matters](http://www.climatecentral.org/climate-matters).] To model use of these materials, and thereby increase participating weathercaster’s sense of self-efficacy to use the materials on-air, the *Climate Matters* Facebook page includes examples of how other weathercasters have used the materials: <http://www.facebook.com/climate.matters/videos>.



**Figure 3: An example of broadcast-ready *Climate Matters* graphics that are produced by Climate Central and distributed to TV weathercasters.**

*The importance of making the behavior fun:* Climate change and biodiversity experts recommend behaviors not because the behaviors are fun, but because they offer important benefits. Regardless, experts shouldn't lose sight of two important facts: People are more likely to perform behaviors that are fun than behaviors that aren't; receiving benefits is fun, while incurring costs isn't.

People are often willing to incur costs to secure benefits that they value (including but certainly not limited to fun). The most attractive offers, however, are those that deliver valued benefits to people at the same time as – or even before – they are required to incur the costs (e.g., “No money down...take the car today”). Conversely, the least attractive offers are those that require incurring costs up front and receiving the benefits only much later (Rothschild, 1999). Many actions recommended to prevent climate change and species loss are seen as requiring costs up front, while delivering benefits only in the future, possibly the distant future.

To enhance the odds that people will adopt behaviors they have already decided are in their best interest, climate change and biodiversity professionals should consider two important questions: *What can I do to make the behavior easier to perform? And what can I do to help decision-makers get immediate benefits from the behavior, especially benefits they care most about?*

Rare, a biodiversity conservation and behavior change organization – based in the US but working worldwide – provides a great example. Rare has developed a highly successful model for enhancing fun, making recommended behaviors easier, and delivering valued benefits immediately – called “pride campaigns” (Boss, 2008; Butler, Green & Galvin, 2013). Pride can be a powerful motivator (Patrick, Chun & MacInnis, 2009). Rare's approach centers on cultivating local pride in a community, or in a nation – pride in their land, in their culture, and in their willingness to rally behind a local iconic species that is threatened by current practices. This iconic species becomes the mascot of their campaign, a campaign that embraces and embodies fun, and offers people immediate benefits in the form of positive reinforcement for participating, and the satisfaction of contributing to something of value to entire community. See the example in Figure 4.



**Figure 4. A Rare Pride campaign in Peru featuring the spatuletail hummingbird that aims to inspire communities to protect the bird's cloud forest habit, thereby protecting their own water resources.**

*The importance of making the behavior (at least seem) popular:* People are highly sensitive to social norms. The more common (or normative) a behavior is perceived to be, the more likely people are to perform it (Cialdini, 2006). There are two distinct types of social norms, both of which exert subtle but powerful influences on people's behavior. Descriptive norms are people's perceptions of how common a behavior (or attitude) is among people like themselves (friends in their social network, members of their "tribe," and/or citizens of their community). Injunctive norms, conversely, are people's perceptions of the degree to which other relevant people (friends, "tribal" members, citizens) approve or disapprove of the behavior or attitude.

The most useful way to harness the influence of social norms depends, in part, on the degree to which a behavior being promoted is currently normative. When seeking to promote a behavior that is currently uncommon among members of the target audience, one can draw attention to specific notable people who are already performing the behavior, to their reasons for performing the behavior, and to the benefits they are enjoying as a result. Shining a light on these behavioral models makes the behavior appear more descriptively normative than it might otherwise seem, and as described above, it can also highlight the behavior's benefits and promote self-efficacy among decision-makers who see the modeling.

Uncommon behaviors can quickly become popular when opinion leaders within a target audience embrace and endorse the behavior, thereby exerting their powerful social influence through injunctive norms. Sustainability professionals can seek out and recruit opinion leaders within their target population as a strategy for accelerating uptake of behaviors they are recommending (Valente, 2012).

If the recommended behavior is gaining in popularity but is not yet normative, efforts can be made to highlight its growing popularity – in the news, in entertainment media, and in social media – as a means of reinforcing the growing norm. Such efforts are particularly

likely to be effective when they highlight notable respected individuals who are now embracing the behavior (e.g., Warren Buffett), especially if most people wouldn't expect those individuals to embrace the behavior.

Opower provides an excellent example. Opower is an American corporation that harnesses social science research on the power of social norms to help utility companies reduce consumer demand for electricity (<http://opower.com/designprinciples>). A study by some of the company's behavioral science advisers (Schultz, Nolan, Cialdini, Goldstein & Griskevicius, 2007) found that when shown on their monthly utility bill their own energy use data relative to the neighborhood's average energy use, above average households subsequently decreased their energy use, and below average households subsequently increased their energy use – thereby demonstrating the power of descriptive norms. The boomerang effect among below average households was prevented, however, by adding a smiley face emoticon on the utility bill to signal the utility company's approval of energy conservation – thereby demonstrating the power of injunctive norms. This simple insight about the power of social norms has led to a thriving business that is helping utility companies in a half dozen nations reduce their need to generate electricity.

In conclusion, communication efforts that use *simple clear messages, repeated often by a variety of trusted sources*, and behavior change efforts that strive to make the behavior you are promoting *easy, fun and popular*, hold considerable promise in helping translate the insights of environmental science into more sustainable civilizations across the globe.

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