TRANSFORMATIVE TRANSPARENCY

LOW CARBON LEADERS

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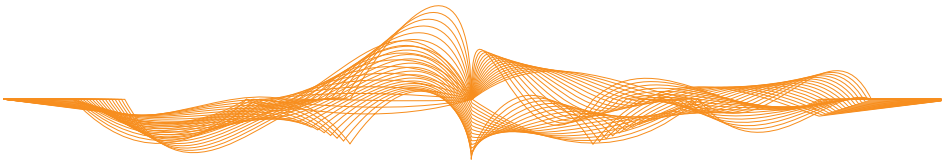
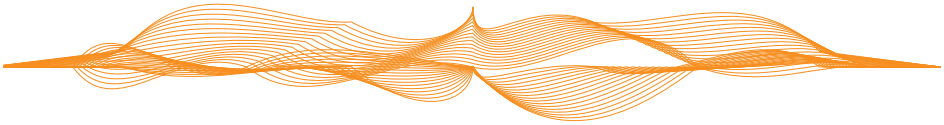
SHORT DESCRIPTION OF TRANSFORMATIVE TRANSPARENCY AND CLIMATE CHANGE



Transformative policy approach highlighted by a focus on transformative transparency:

→ Transformative transparency that supports low-carbon development and challenges old growth models



We are entering what amounts to a new industrial revolution that will change the rules that have guided the development of societies and economies so far. These fundamental changes have significant implications. The new kind of transparency that is realized by a paradigm-shift in access to information and by possibilities for collaborative development of solutions—in part captured by ideas represented by wiki approaches and so-called crowd-sourcing—is one of the most important of these changes. How society addresses climate change will to a large extent depend on the transformative transparency currently emerging.

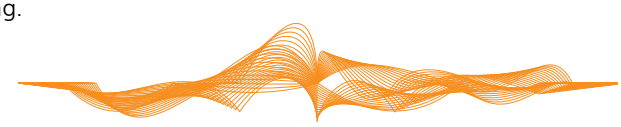
Totally new opportunities will arise due to an unprecedented connectivity and some of these will generate challenges for those who act so as to undermine the well-being of the many. The world will be transparent in a way never experienced.

This development is the result of an increasingly dense network of connected devices, more powerful processing capacity, smart programs that can analyze new kinds of information, and the exponential growth of smart phones.

Already, smart phones users can download apps that let users filter out corporations' preferred images. For instance, "The Leak in your Hometown" is an app that enhances real-world BP logos with an animation of a burst pipe, oil pluming upward.[1] The app lets the smart phone camera recognize the BP logo and presents an information-augmented reality on the smart phone screen.

The automotive industry is developing technology enabling information-augmented windshields.[2] Augmented-reality eye glasses for personal and professional use are already manufactured by both by a new generation of companies such as Vuzix, Lumus and Inition, as well as some of the bigger companies including Olympus in collaboration with NTT.[3]

Another example is "Unlogo," a program that not only

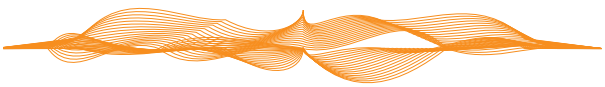


Transformative transparency

Transformative transparency occurs at the threshold point at which massive amounts of data on goods, services, or even individuals, can be accessed instantly, in ways that allow users, or programs, to make decisions and provide immediate feed-back.

At such a point, an interactive "reality search engine," i.e, a situation in which objects and events in reality, not words or sentences on the web, are processed, becomes possible.

This requires an infrastructure with high connectivity and a critical mass of users who engage with this information. The current situation with smart phones and connected devices indicates that we have just arrived at this point.

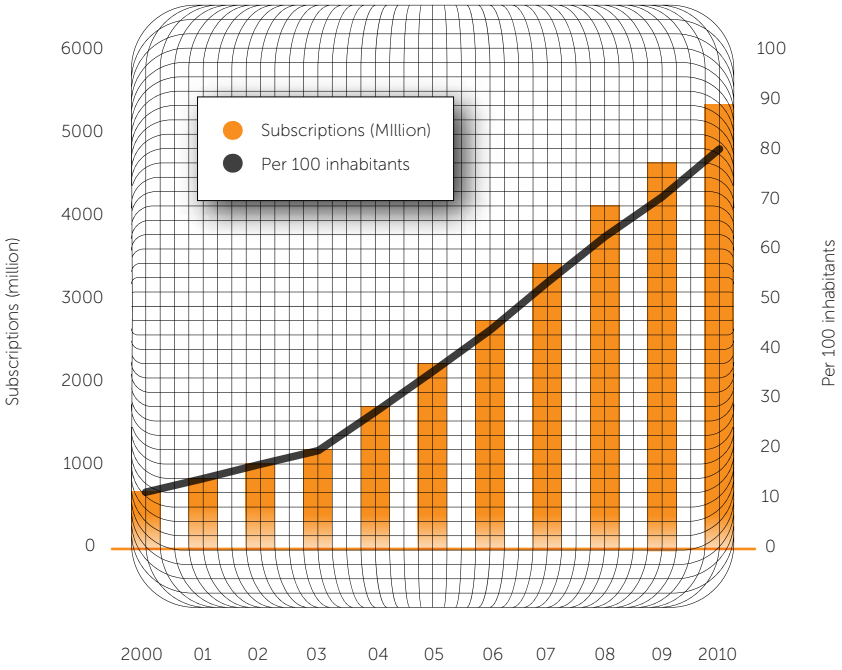


removes the relevant logo, it replaces it with a photo of the CEO or any other information about the company you might be interested in.[4] Today it is being developed for video, but real-time applications for smart phones, or, further down the line, contact lenses, that allow you to see a more "true" world than what is possible with the naked eye are no longer science fiction.

Transformative transparency means more and entirely new opportunities for people to make informed choices and create networks that can achieve the critical mass required for change. Still very few companies have explored this are for more than simplistic marketing.

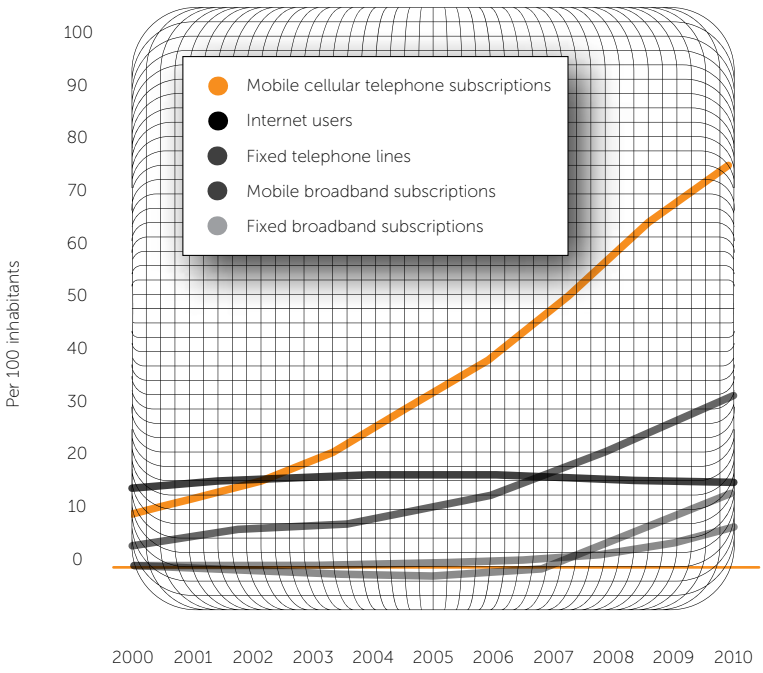
Consider the synthetic estrogen, Bisphenol A (BPA). More than three million tonnes are produced annually.[5] What if you could use your smart

Global mobile cellular subscriptions, total and per 100 inhabitants, 2000-2010



Source: ITU World Telecommunication/ICT Indicators database

Global ICT development, 2000-2010



Source: ITU World Telecommunication/ICT Indicators database

phone to "see" the concentration of BPA around you? What if when you aim your phone at a product, it gives you information about the investments the manufacturer is making in efforts to eliminate BPA, or, alternatively, about the money the company spends on lobbying for business-as-usual, blocking policy initiatives that would cut pollution.

The same goes for any issue or company you are interested in. Within next years it will be possible to choose to see the world and select the areas that you are interested in. Then you will be able to see how the world around you is related to these issues.

THE INFRASTRUCTURE BEHIND TRANSFORMATIVE TRANSPARENCY

Two factors define transformative transparency: the physical infrastructure and the services offered.

The physical infrastructure consists of the following factors:

1. Number and type of connected devices
2. Speed and amount of information that can be transmitted between devices
3. Number and kind of people with mobile smart interfaces (and other ways to connect)
4. Storage capacity and processing power

The services consist of the following factors:

1. Accurate, commensurable/standardized, and accessible data
2. User interfaces
3. Distribution platforms (blogs, social media, but also established media)

Observing the "connected devices" around us shows a dense web of connected devices and how fast this connectivity is spreading. There are many different kinds of connected devices; categorization is not obvious. What is required for a device to be categorized as "connected" depends on what aspect of the connectivity you are interested in. If there are multiple parts in a device, should they can be counted as separate devices with separate qualities or as a single bundle. This depends on what you want to study. In addition to these fundamental questions, there are difficulties in obtaining accurate market data on number of devices sold and in use.

Estimates for the number of connected devices today and the potential for 2020 range from a few million to a trillion.[6] Connectivity will grow exponentially over the coming years.

HP Labs is developing very low-cost self-powered sensors that can be embedded in large numbers in many different types of infrastructure, such as buildings, roads, bridges and even agricultural fields, to enable ongoing control of operations for improved energy efficiency and performance.

HP envisions an interconnected system with up to a trillion sensing stations, each the size of a pushpin and carrying 10 to 20 sensors, capable of measuring things like light, temperature, vibration, stress and moisture with tremendous sensitivity.[7]

The infrastructure to which the devices are connected will develop rapidly over the next years. Cisco estimates that the that the global IP traffic will

nearly double every two years through 2012. Total IP traffic in 2012 will be six times larger than it was in 2007. The Internet in 2012 will be 75 times larger in 2012 than it was in 2002. Internet traffic will generate over 300 exabytes in 2012, the equivalent of about 70 billion DVDs.[8]

The devices need to be connected to people, or there will be no transformative transparency. The new generation of smartphones that allows for analysing sound and images, as well as geographical position, provides the interface that allows the first phase of transformative transparency. The sale of smart phones is expected to jump from approximately 190 million in 2009, to over 490 million units by 2012 and reach a billion units by 2015.[9] [10]

A QUICK LOOK INTO THE WORLD OF TRANSFORMATIVE TRANSPARENCY

When "connected" to a smart device, a user will be able to enter a new world. In this world, the history and future of objects can be "collapsed" and seen through filters provided by various stakeholders, including through what we can think of as "ethical filters." Simply by pointing the camera in your smart phone toward an object, for example, a container of orange juice in a grocery store, you will be able to enter into a new world. For many products, you can already use barcodes to compare costs as well as access basic environmental information.[11] Soon you could get a summary of human rights conditions and environmental problems in the region the oranges are from.

Combining different data sources will allow you to see how much CO2 was required to get the container to the store, see what the juice company is planning to invest in next, and give a visual overview of what your money will be invested in, should you purchase the juice. You can see how this kind of product will be handled once you throw it away or recycle it, based on where you live; you can get information about the gender balance in the companies providing the product; you can get nutritional information about the juice and whether this fits your needs, based on your health profile, and on and on.

The challenge will not be access to information; it will be trust and interest. Who will you trust to provide you with guidance and what is important for you? You will be able to set your own profile, and based on your connections in your email address book and on social media platforms, such as LinkedIn and Facebook, you will be able to get suggestions for settings that may interest you. You might be told that many in your network use WWF and Greenpeace for environmental information, Amnesty for human rights, UNDP and Actionaid for poverty reduction, etc. Then you decide if these are issues that are important to you, and whether these are sources that you trust.

But access to information is only the tip of the iceberg. You can start tracking your own behavior and set up targets for what you want to do. Do you want to support companies that invest in solar solutions in Africa and education for children and be warned if there are companies that systematically use child labor and lobby for weaker regulations with regard to health, environment and human rights? Instead of being confused by the media's focus on dramatic events, it will be easier to make judgments based on substantial issues, less focus on companies involved in a single media-friendly incident and more focus on companies that, over time, are moving in the right, or wrong, direction.

As the number of connected people increase, so will the possibilities to

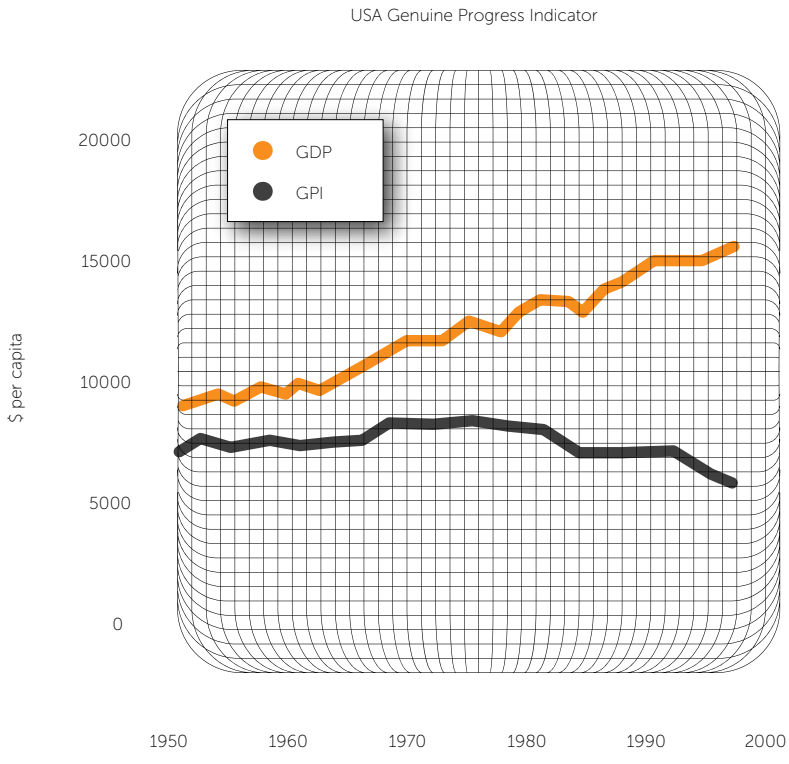
directly connect to people that are linked to our lives. When we see things around us it will be easier to connect to those who have produced them and other that have used them. With increased traceability you will be able to connect with the farmer that produced your coffee or the miners that extracted the metals for your mobile phone.

The emerging transformative transparency is already challenging many of our current concepts such as "economic growth" in ways that would have been hard to anticipate just a few years ago. This issue obviously goes beyond climate change and the need to reduce emissions in society. Still, as the need to address climate change requires so many significant changes in society, the need for a low-carbon economy is one possible trigger for a larger shift from a focus on quantity to a focus on quality.

FROM QUANTITY TO QUALITY WITH TRANSFORMATIVE TRANSPARENCY

Understanding which companies are providing goods and services that contribute to increased quality in society is hard. It's hard to establish what quality is. The need to discuss quality of life and the need to move beyond a focus on economic growth have emerged in part as a response to the fact that increased material welfare is not linked to increased well-being in any simple way. Many studies have noted that neither economic growth nor simply "more of everything" is directly correlated to increased well-being.

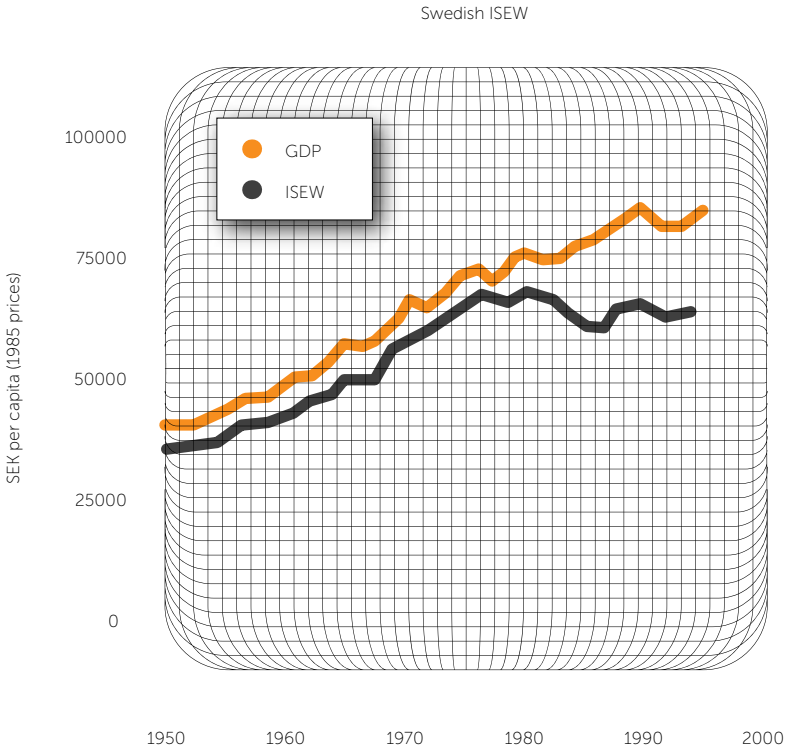
The fact that increased material growth is not correlated to increased well-being may sound obvious, but for most of human history the main obstacle to well-being has been not having enough material resources to satisfy basic needs such as nutrition, health, shelter, and sanitation, etc. After the Second World War, an increasing number of countries and regions started reaching a level at which economic growth and welfare are no longer correlated. That's when governments started using GDP to shape policies.



The focus on quantity after the Second World War was in large part due to the lack of better data. Since then institutions have been built around a perspective that has many limits that no longer are needed. Today, we have better data.

Over a certain level, economic growth in most countries begins to result in more and more negative impacts, externalities, that are included as positive contributions to economic growth (more road accidents, more pollution that needs to be cleaned up, etc). Sometimes economic growth also contributes negative externalities that result in reduced well-being but are not captured in GDP (e.g., increased noise from roads that disturbs people living close to it and pollution of lakes that people like to swim in). This gap between GDP and what society wants has resulted in a number of attempts to develop indicators that better capture what we do want, of what GDP delivers, such as the ISEW (Index of Sustainable Economic Welfare).[12]

Further, many studies indicate that people don't appreciate more material goods and other things that increased GDP delivers beyond a certain level in the same way. Instead people start to care more about good relations to friends, realize dreams they have, and care about nature more. This is a more fundamental challenge and also one that makes it difficult to compare different parts of the world as the needs are so different. We are the first generation in human history where as many suffer from too much to eat as too little to eat and where the top ten list of health threats are a mix of over- and under consumption.[13]



LOW-CARBON SOLUTIONS AND NEGATIVE EXTERNALITIES

The fact that it is possible for companies, countries and individuals to emit carbon emissions without having to pay for the damage done is a classic problem of externalities.[14] What is special about climate change is that it has a number of characteristics that make it difficult or even impossible to deal with in traditional ways.

First the obvious: those who suffer most of the impact of the emissions do not live in the same countries as those who contribute to most of the emissions. But most systems used to compensate for externalities are based on national systems. This poses a significant challenge. The attempts to create a global system in which countries agree on how to deal with emission reductions and compensations have clearly demonstrated the challenges associated with a system in which polluting countries compensate those who suffer from the pollution.

Second, the time aspect: the impacts of climate change today are the consequences of actions decades ago, in the same way that emissions today will result in problems decades from now. When the direct link between cause and effect is broken, it is difficult to establish a system for compensation.

Third, equity: most systems that deal with externalities exist in situations where the income differences are not too great. In a global situation, the income differences are so enormous that economic compensation turns into an equity challenge. A parent with starving children can be assumed to sell their emission rights as long as they get anything that will feed them. But is it ethically unacceptable for a wealthy person driving an SUV to a fast-food restaurant to purchase emission rights from someone who hardly has anything to eat?

Fourth, and maybe the biggest challenge: the fact that the global climate is a dynamic system. In such systems there are thresholds. One such threshold is what has been called runaway global warming.[15] The fact that nature is not responding in a linear way and that irreversible processes can be triggered is something that most economic models can not deal with.

Instead of a traditional market mechanism for deciding the price of carbon, a political decision to establish a safe level of carbon emissions is needed; the carbon price and other climate policies would be constructed so as to be accountable to this level. Such a system has never existed; it is a challenge to the way global emission reductions are approached today.[16]

> "We are facing a looming environmental crisis, especially associated with global warming. Market prices are distorted by the fact that there is no charge imposed on carbon emissions; and no account is made of the cost of these emissions in standard national income accounts. Clearly, measures of economic performance that reflected these environmental costs might look markedly different from standard measures."[17]

NEEDS BEYOND MORE

The inability of the current system to account for what people want, e.g., quality of life, is a serious challenge. In a society that can not meet the basic demands for nutrition, shelter, and health, it is easy to see that a focus on "more" can be used as an approximation of what people want, but for an increasing number of societies, a key challenge is over-consumption.[18]

For a long time it was assumed that societies and individuals followed a linear development where one step had to be reached before the next could be taken. Models like Rostow's Stages of Growth were used for national development; for individuals, models like Maslow's hierarchy of needs were used.[19] [20] These models ignore two important factors. First, that marketing and PR can influence the perceived needs of people. Second, that humans are more complex and don't evolve following a step by step model.

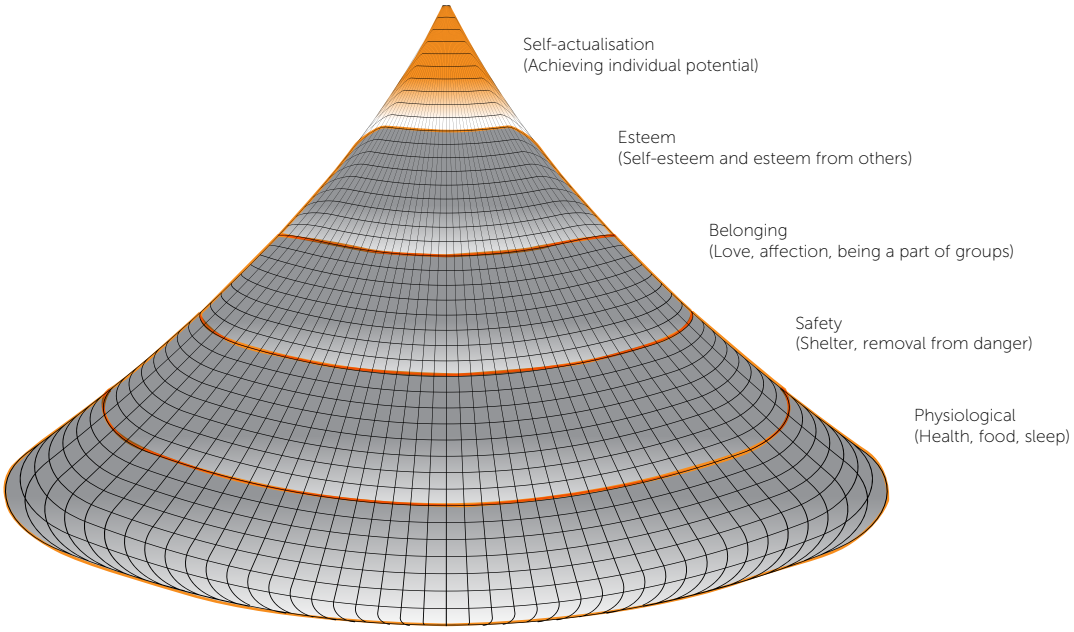


Illustration: Maslow's hierarchy of needs

In order to provide a more nuanced and correct approach regarding how we as human beings actually approach life, a number of models have been constructed. One of these is the theory about fundamental human needs, developed by Manfred Max-Neef.[21] In this model fundamental human needs are presented in context.

For sustainability in the 21st century, companies will probably be challenged to provide proof of how they are providing what people and society need. The Max-Neef matrix provides a context for what should be provided. It is not enough to provide food; the food should provide physical and mental health as well as allow people to do things like work and rest. Such a context will challenge companies that provide things that people might need, but that can be over-consumed. The basis for such an approach is that people should have freedom to chose and have access to full information. Such an approach will also help encourage increased transparency in order to make it more difficult to hide negative consequences and easier to verify positive consequences.

The matrix is also interesting as it includes the more aesthetic aspects of life also. Many of the early promoters of equity and environmental sustainability focused mainly or only on the basic material needs like food and shelter. This resulted in a situation where aesthetics and creative aspects of life often were forgotten.

Fundamental Human Needs	Being (qualities)	Having (things)	Doing (actions)	Interacting (settings)
Subsistence	Physical and mental health	food,shelter work	feed, clothe, rest, work	living environment, social setting
Protection	Care, adaptability, autotony	Social security, health systems, work	co-operate, plan, take care of, help	Social environment, dwelling
Affection	Respect, sence of humor, generosity sensuality	friendships, family, relationships with nature	Share, take care of, make love, express emotions	Privacy, intimate spaces of togetherness
Understanding	critical capacity, curiosity, intuition	literature, teachers, policies, educational	Analyze, study, meditate, investigate	Schools, families universities, communities
Participation	receptiveness, dedication, sense of humor	responsibilities, duties, work, rights	Cooperate, dissent, express opinions	Associations, parties, churches, neighrohoods
Leisure	imagination, tranquility, spontaneity	games, parties, peace of mind	Day-dream, remember, relax, have fun	Landscpaes, intimate spaces, places to be alone
Creation	imagination, boldness, inventiveness, curiosity	abilities, skills, work, techniques	Invent, build, design, work, compose, interpret	Spaces for expression, workshops, audiences
Identity	Sense of belonging, self-esteem, consistency	language, religions, work, customs, values, norms	Get to know oneself, grow, commit oneself	Places one belongs to, everyday settings
Freedom	autonomy, passion, self-esteem, open-mindedness	equal rights	Dissent, choose, run risks, develop awareness	Anywhere

Illustration: Manfred Max-Neef's fundamental human needs

Taking a step back, the vision of what kind of society we want, as well as how we think we should behave, may be some of the most important questions a company can ask, not only what kind of technological solutions exist.

> "When one deals with a problem like the environment, I think it is important to think that there are two really quite different ways of approaching the issue. One, treat it like private goods. Parcel it out and so the people have property rights in some ways, it is not very easy to do with global warming, but it can be done in some other cases.
>
> The other approach is to recognize that human beings respond not just to profit incentive, but also to thinking about what is an appropriate way of behaving in the world. And that is a different approach. And that requires to rethink about how shall we act? What kind of people are we? How should we behave?
>
> I think one of the reasons why I somewhat resist the idea of trying to calculate the environmental losses is also that it adds to what I would regard the simplistic trap of the language... We ought to emphasize the limitations of the market way of thinking, which I think are very great. It is not the limitation of economics as such, the discipline is broader."[22]

In order to explore the contribution to increased quality in society, companies could develop systems to report on their contribution to quality in society. Low-carbon quality leadership would include both the products and services that are needed, as well as solutions that encourage innovation, distribution and use of low-carbon solutions.

> "The term quality of life is used to evaluate the general well-being of individuals and societies. The term is used in a wide range of contexts, including the fields of international development, healthcare, and political science. Quality of life should not be confused with the concept of standard of living, which is based primarily on income. Instead, standard indicators of the quality of life include not only wealth and employment, but also the built environment, physical and mental health, education, recreation and leisure time, and social belonging."[23]

UNDERSTANDING A SHIFT FROM QUANTITY TO QUALITY WITH TRANSFORMATIVE TRANSPARENCY

The current discussion about growth often gets stuck in a "pro-" or "anti-" polarization. It is probably better to describe the shift from quality to quantity as an evolution: society moves from one era to another. In the same way technology evolves, social and economic systems evolve. We still have similar tools as those we used during the stone-age: hammers, levers, knives, etc. With more focus on quality, there will still be need for "more" in many areas, but it will be related to quality.

For companies, the shift from quantity to quality can support innovation and make it easier to be transparent in relation to customers. The increasingly connected society will result in increased transparency as well as possibilities. Here are three examples with a focus on low-carbon:

For a retailer selling home furniture, a shift from quantity to quality could result in a focus on how people live the life they want to at home in a sustainable way, with positive social and environmental consequences in the rest of the world through the purchase and use of products and services from the retailer. This would require a significant shift compared to current ways of measuring success, often based on maximizing sales of physical goods.

From a company in the health sector a shift from quantity to quality could result in a focus on people's well-fare, not maximizing sales of pharmaceuticals and health-equipment. The focus would be on how customers live a healthy life, not only on treating them when they are ill. How the food is bought, what food is bought, how it is cooked, how it is enjoyed, as well as how the waste is dealt with, would be key, in combination with how people exercise and measure their physical condition. This would also encourage collaboration with companies in other sectors.

For an ICT company selling communications equipment, a shift from quantity to quality could include very many different things, as communication is the 21st century infrastructure and necessary for most low-carbon solutions. Supporting positive impacts related to how other companies use the services provided will be crucial. ICT companies may also explore the possibility to measure broader trends in cities, companies, and clusters of people, in order to assess the positive contributions using a quality matrix based on areas where companies can improve the quality of life for people, such as those outlined by Max-Neef.

How companies will measure their contribution to quality will be a major challenge, but with the increased connectivity, the possibilities for measuring the physical consequences as well as getting feedback from customers will increase.

Companies exploring and supporting transformative transparency could help move the low-carbon and sustainability discussion to the next level.

HOW TO ACCELERATE A SHIFT FROM QUANTITY TO QUALITY WITH TRANSFORMATIVE TRANSPARENCY

NEW NETWORKS

❍ More than anything else, new networks are needed. Collaboration between different kind of companies, ensuring competence from different sectors and the best from large companies and small start-ups, is important. To really make a difference, it is also necessary to look beyond the corporate sector and create projects where thought-leaders from business, politics and NGOs collaborate together.

POLICY MAKERS

❍ Should develop measures that encourage companies to provide solutions based on quality instead of quantity. In most cases, this will require a shift from products to services.

❍ Should encourage companies in industries that are far from the end-consumer to move up the value chain to ensure that they are not investing in unsustainable and high-carbon solutions. Steel, cement, and mining companies are examples of sectors where a shift is needed.

❍ Should support new innovative ideas. Initiatives should be structured in a way that ensures that not only the traditional networks get funding and support.

❍ Should ensure that industry groups should be given less time and smaller roles compared with leading companies in different sectors.

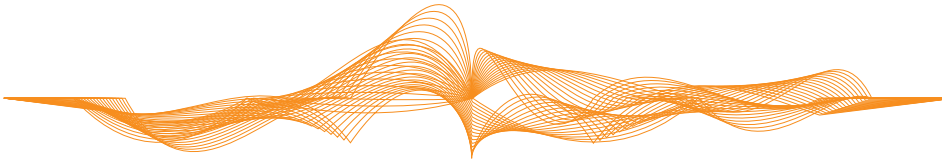
SOLUTION PROVIDERS

❍ Shift business model from a focus on products to services, and develop a strategy for how the service provided can be sustainable.

❍ Assess if the services provided increase or decrease the user's ecological footprint.

❍ Assess if the services provided are contributing to, or depend on, large income differences.

❍ Assess marketing and see what values are communicated to society.



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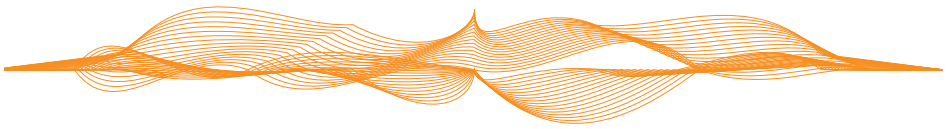

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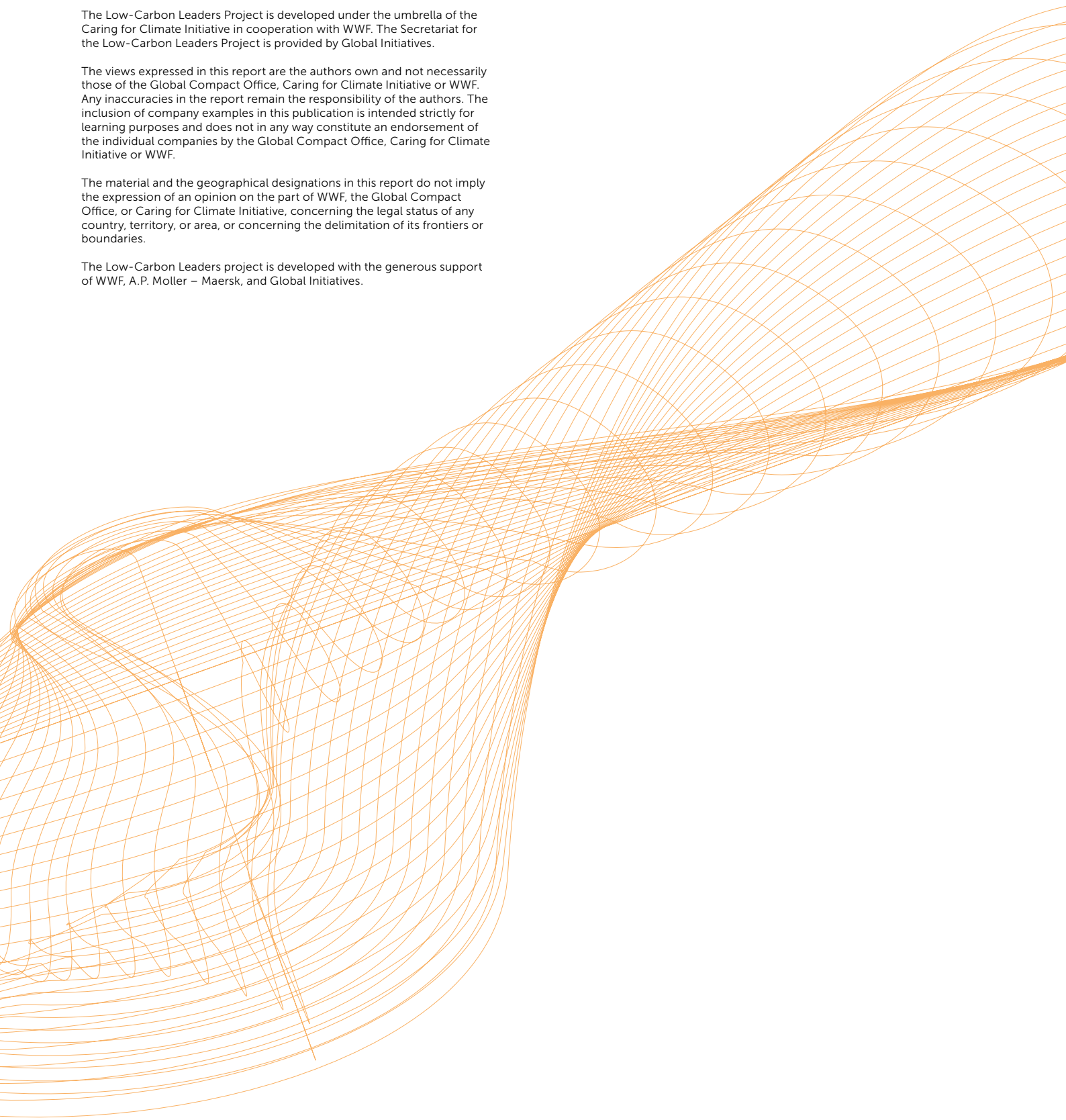

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