

# **OUR PERSPECTIVE ON THE CLIMATE CHALLENGE SUSTAINABILITY FIRST**

GRUNDFOS WHITE PAPER

## Foreword

This whitepaper presents Grundfos' response to the challenge of climate change.

It explains the framework we employ to tackle this global issue and grow our business at the same time. However this white paper is not an action plan. The purpose is not to provide detailed instructions on how Grundfos will address climatic changes; rather the aim is to set the overall direction for future climate related initiatives at Grundfos.

To state our firm commitment to action, we have defined a number of 2010 commitments. These are mentioned in the end of the white paper and they will guide our efforts to take on the climate challenge.

The purpose of the paper is to:

- Present our coherent point of view on the issue of climate change
- Clarify our contribution and role
- Motivate and inspire all our employees to help Grundfos take on the climate challenge

First we will explain why the global consequences of climate change matters to Grundfos and why we need to tackle them.

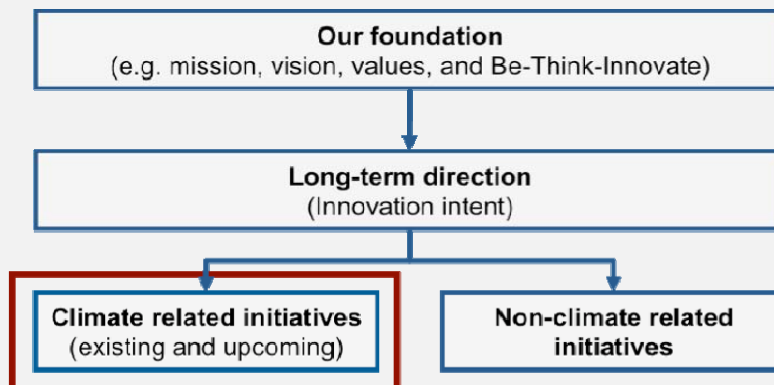
Second we will outline the fundamental principles that guide our actions on climate change.

Third we will identify our role and contribution stating where we can make the greatest difference.

Fourth we will outline how we plan to execute on our commitments, actively involving our entire organization and external stakeholders.

### Box 1: The strategic role of the climate white paper

The climate white paper builds on both the Grundfos foundation and our Innovation Intent. The purpose of this climate white paper is not to create measurable ambitions and actions but rather to provide a direction for existing and future climate related initiatives.



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## 1. TAKING ON THE CLIMATE CHALLENGE

Climate and environment feature prominently on the agenda of politicians, the business community and the public in general. There is a widespread concern about the state of our world and the potential effects of rising concentrations of CO<sub>2</sub> in the atmosphere on our daily lives<sup>1</sup>.

Climate change presents a profound challenge for both Grundfos and the world around us. Only the future will reveal the full impact of the current climate changes but we believe that we have to act now.

We are a company founded on responsibility. The mandate of the Grundfos Foundation requires us to act conscientiously in all aspects of our business. With respect to the environment Grundfos will continue to live up to its legacy, acting proactively as a responsible member of society. As recent as 2007, we stated our commitment to sustainability in our Innovation Intent continuing a path we have long followed.

### **Box 2: Grundfos' pumps are more energy-efficient than industry average**

The energy-efficiency of our pumps helped our customers reduce the energy consumption in their pumping systems with 5 billion kWh compared to the industry average. That is equivalent to the annual electricity consumption of approx. 1,1 million European homes.

Acting now on climate change also presents ample opportunities for business. We believe the customers of tomorrow will increasingly expect sustainable products. By seizing the initiative now, Grundfos will both help improve the environment and grow our competitive advantage at the same time.

With a deep commitment to sustainability, it is only natural that we think ahead and do our part to combat climate change. However, navigating this difficult issue requires careful consideration and an unwavering approach.

As a global company, we need to align our approach to take on the climate challenge. To ensure this, we have identified five guiding principles that will help us make the right choices:

1. Our perception of climate change is based on science
2. We see climatic changes as part of a larger sustainability issue
3. Through innovation, economic growth and fighting climate change can go hand in hand.
4. We are convinced that taking the lead in fighting climate change brings vast business opportunities
5. We need to focus where we can contribute the most

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<sup>1</sup> CO<sub>2</sub> expresses the concentration of green house gasses in the atmosphere measured in Carbon Dioxide equivalents

<sup>2</sup> Energy savings are calculated by comparing the energy-efficiency of Grundfos pumps sold in 2008 with the average energy-efficiency of the installed pump base in Europe. The calculation conservatively assumes that the average energy-efficiency in Europe is the same globally.

<sup>3</sup> An average European household consumes 4.667 kWh a year (International Energy Agency)

### 1.1 Our perception of climate change is based on science

*When approaching the climate challenge we rely on the IPCC, which concludes that climate changes are driven by human actions and that we need to drastically reduce our CO<sub>2</sub> emissions in order to combat climate change.*

When it comes to climate change, a lot of voices can be heard. The question is whom you listen to and rely on.

Grundfos is a company that relies on facts. In this sense, the issue of climate change is no different than others. We choose to follow the latest and most convincing scientific research rather than lean on intuition, opinions or subjective trends. Of course, the science on climate change is subject to change. Therefore we will keep following the latest scientific developments, and adjust our actions accordingly.

Currently, the Intergovernmental Panel on Climate Change (IPCC) compiles the most advanced scientific research on the global environmental challenge. This scientific body, tasked by the United Nations to evaluate the risk of climate change is, with more than 2500 scientific expert reviewers, the foremost authority on climate change in the world. Therefore, we at Grundfos currently base our perspective on climate change on the IPCC research.

The key conclusion of the latest IPCC report is that most of the increase in global temperatures since the mid-20th century is most likely caused by increased anthropogenic (human) greenhouse gas emissions. It is estimated that man-made CO<sub>2</sub> emissions account for over 60% of the enhanced greenhouse effect<sup>4</sup>. In other words – we as humans and businesses are the main cause of the present and anticipated climatic changes.

#### **Box 3: Greenhouse Gasses and Effects**

Greenhouse gasses (GHGs) are naturally occurring gasses, accounting for approximately 1% of the Earth's atmosphere. The main GHGs are water vapour, carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide and ozone. They act as a natural insulating 'blanket' around the Earth – or as the glass roof of a greenhouse – by 'trapping' heat. Without them, the average temperature of the Earth would be around 30°C degrees lower.

The natural greenhouse effect is amplified by man-made emissions of CO<sub>2</sub> from the burning of fossil fuels such as coal, oil and natural gas. In addition, methane and nitrogen oxides from agricultural operations and the use of industrial gasses that do not occur naturally further destabilize the greenhouse effect. The result is an "enhanced greenhouse effect" which is changing our climate.

Once emitted, most GHGs exist in the atmosphere and affect our climate for a very long time. Because the atmosphere spans the entire planet, CO<sub>2</sub> emitted locally has a global effect.

The concentration of GHGs in the atmosphere is measured in carbon dioxide equivalents (CO<sub>2</sub>e). This expresses the combined effect of the GHGs excluding water vapor.

The IPCC projects that if we continue to grow our economy as we do now, world temperatures will rise by between 3-6°C by 2100 compared to 1900. The possible

<sup>4</sup> The United Nations Framework Convention on Climate Change:  
[http://unfccc.int/essential\\_background/feeling\\_the\\_heat/items/2903.php](http://unfccc.int/essential_background/feeling_the_heat/items/2903.php)

<sup>5</sup> As part of the natural water cycle, water vapor is not a man-made greenhouse gas and is therefore excluded from calculations of carbon dioxide equivalents.

consequences of rising temperatures are severe: Rising sea levels, increased frequency and severity of floods, droughts, storms and other types of extreme weather events are just a few of the threats of global warming.

According to the IPCC, a temperature rise beyond 2°C will greatly decrease the chance for societies and ecosystems to adapt. With adverse effects on global health, water and food supply such climate changes could lead to severe social disruption.

In other words, we need to stabilize the temperature rise at maximum 2°C. This is not an easy task. According to the IPCC, by 2050 we need to have reduced our greenhouse gas emissions by 85% compared to 2008.

For Grundfos, leaning on IPCC means acknowledging that the climate changes are real and should be taken very seriously. Action must be taken now and even if we manage to ward off further temperature increases, we will need to adapt to the irreversible climate change set in motion by human actions to date.

Albeit small, there is a chance that the global warming is not caused by humans<sup>6</sup>. But out of consideration for future generations, we cannot gamble and hope for the off chance that human emissions are not causing climate change. Therefore, we insist that businesses, politicians and individuals must take action now.

**Box 4: IPCC conclusions that form the basis of our perception of climate change**

- Climate change is real (in such forms as rising temperatures, rising water levels, widespread drought and extreme weather events)
- Increased atmospheric CO<sub>2</sub> levels will intensify these changes
- Climatic changes are very likely due to the increase in man-made CO<sub>2</sub> emissions
- Today the concentration of CO<sub>2</sub> is 385 parts per million (ppm) – the highest concentration of CO<sub>2</sub> in the atmosphere in the last 500.000 years.
- We need to keep the temperature increase below 2°C compared to 1900 to keep the environmental damages at a manageable level
- Stabilizing the concentration of CO<sub>2</sub> at 400ppm, would keep the temperature increase under 2°C compared to 1900
- To stabilize the concentration of CO<sub>2</sub> at 400 ppm, by 2050 we need to have reduced our greenhouse gas emissions by 85% compared to 2008

**1.2 We see climatic changes as part of a larger sustainability issue**

*For Grundfos, climate change is part of a larger sustainability agenda, and particularly relevant due to its impact on the world's water resources.*

We believe that climatic changes are an integral part of the larger sustainability agenda. Even if the IPCC projections turn out to be wrong, the environmental impact of our actions cannot be ignored, as human action has already caused severe environmental degradation throughout the world.

Human activity has consequences for health and the environment in a variety of ways. With a rapidly growing population, our current consumption patterns are unsustainable. Population

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<sup>6</sup> The IPCC claims that the probability of humans not being the cause of most of the increase in global temperatures within the last 50 years is between five and ten percent.

growth, urbanization, and rising living standards have caused the demand for water and energy to double within the last 35 years. Oil reserves are running out, but we still depend heavily on them. In many regions, the availability of clean fresh water is becoming increasingly scarce while the demand is rapidly growing. In addition, deforestation and pollution are already threatening global biodiversity and human health.

**Box 5: Increased water stress has already had severe consequences for human health**

- 884 million people lack access to safe water supplies.
- At any given time, patients suffering from a water-related disease occupy 50% of the world's hospital beds.
- 5 million people die each year from water-related illnesses.

In recent years, the scientific community has increasingly warned that climatic changes associated with increased levels of greenhouse gasses in the atmosphere threaten to exacerbate existing sustainability issues. IPCC warns of dramatic reductions in food supplies, loss of biodiversity, and increased water stress, threatening public health and economic development in areas throughout the world.

One of the most drastic effects of climate change is in relation to the world's water supplies. According to the IPCC "*water and its availability and quality will be the main pressures on, and issues for, societies and the environment under climate change*".<sup>7</sup> In other words, adapting to climate change means adapting to a world of increased fresh-water scarcity.

Changes in precipitation patterns, increasing needs for irrigation, cooling, and hydration along with contamination of fresh water resources, will greatly increase water scarcity. In addition, raising sea levels and more frequent extreme weather events such as droughts or floods will further stress the water resources.

The tools to create a more sustainable consumption pattern are similar to the tools we must employ to combat climate change. For example, energy efficiency, resource management, and water conservation all help us use otherwise depleting resources more efficiently. Therefore acting on climate change will help us solve other of the world's most pressing issues.

**1.3 Through innovation, economic growth and fighting climate change can go hand in hand.**

*Grundfos must be ready to make a giant leap towards a low carbon economy because we believe reducing emissions of CO<sub>2</sub> should not come at the cost of economic growth.*

The emission of greenhouse gasses will need to be lowered dramatically. However Grundfos does not believe reducing emissions at the cost of long-term economic growth is a viable option. We believe the world population has both a right to and a need for, continued economic growth. Particularly the parts of the world that have yet to attain the prosperity of the West harbor expectations for growth that must be recognized.

To combine the principles of carbon stabilization with continued economic growth, we need to dramatically increase the level of 'carbon productivity'. By carbon productivity we mean

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<sup>7</sup> Climate Change and Water, Technical paper VI, IPCC June 2008

the level of GDP output per unit of CO<sub>2</sub> emitted<sup>8</sup>.

Without a major boost in carbon productivity, stabilizing greenhouse gas emissions would require a major drop in lifestyle. According to an analysis conducted by McKinsey & Co. we need to increase our carbon productivity 10 times by 2050 compared to 2008 if we are to achieve our economic growth targets and stabilize the temperatures at the same time<sup>9</sup>.

It will not be easy to increase the carbon productivity by a factor 10 by 2050. Such a change will require transformations in the world economy. Given the magnitude of the carbon productivity challenge, businesses need to take on leadership and raise their ambitions.

The world has managed to overcome such a technological leap before. During the industrial revolution, labor productivity increased 10 times through the advent of innovations such as the assembly line, the automobile, the telephone, the light bulb, or the airplane. The extent of the economic transition we are about to embark on is similar to the Industrial revolution. However the coming “carbon revolution” has to be achieved in one-third of the time. If we are to truly decouple CO<sub>2</sub> emissions from our growing economy, massive innovations are required.

Tackling the climate challenge and growing our business at the same will require a wide array of tools. There is not one silver bullet that can solve the issue by itself. Some cost-efficient options for climate change abatement are already available. For example improved energy efficiency is often a good investment. Still we believe many disruptive innovations have yet to be developed. Solving the problems of the future with the products of the past is simply not an option.

Being part of the solution to the climate challenge, Grundfos must apply a broad range of initiatives that together can propel our company into a more sustainable future. It will require innovative thinking at Grundfos. Therefore, we need to continue innovating the best engineering solutions to the world’s environmental problems. We need to use our imagination, embrace new technologies, search for systems solutions and accelerate our environmental agenda. And we need to do this at a higher pace than ever before.

#### **1.4 We are convinced that taking the lead in fighting climate change brings vast business opportunities**

*By having an ambitious and action-oriented approach to the climate challenge, Grundfos will generate significant business opportunities*

Grundfos needs to show leadership in fighting climate change. It would be easy for us to lean back and wait for politicians and regulators to come up with frameworks to deal with climate change. But Grundfos is not that kind of company. As corporate citizens of the world, we believe businesses have a responsibility to act. Businesses are directly or indirectly responsible for a major part of the CO<sub>2</sub> emissions that are destabilizing our climate. Since businesses are a big part of the problem, they should also be a big part of the solution.

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<sup>8</sup> Carbon productivity can be thought of in the same way as labour productivity (GDP output per unit of labour).

<sup>9</sup> The McKinsey analysis operate with a stabilization scenario of 500 ppm. The IPCC scenario of 400 ppm would demand an even higher carbon productivity.



Climate change poses great threats as well as great opportunities for businesses. Balancing between the need of the business and the greater societal needs can be difficult.

For us, climate change is about action rather than words. We do not want to be a company that says a lot but does very little with respect to the environment. We cannot remain a trustworthy partner for our customers, unless we create genuine impact.

However creating true impact does not compromise our ambitions. We expect to grow our business rapidly in the future because - not despite - of our focus on climate change and sustainability.

We believe that becoming a more sustainable company holds great competitive advantage since our customers will increasingly look for environmentally friendly solutions. By taking the lead in fighting climate change, we will unlock a plethora of business opportunities. Therefore it makes perfect sense for businesses to stop being part of the problem and begin being part of the solution to climate change.

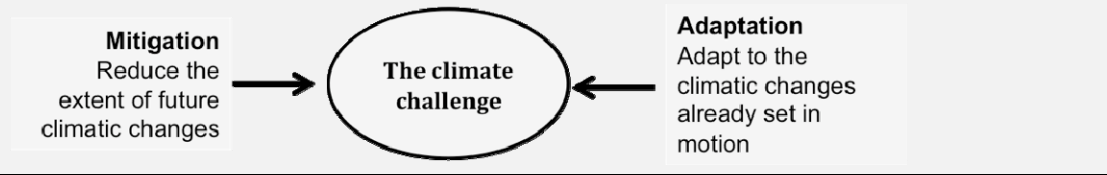
### **1.5 We need to focus where we can contribute the most**

*By utilizing our core competencies while engaging more closely with our stakeholders, we will strive to significantly reduce CO<sub>2</sub> emissions and water consumption throughout our value chain and help the world adapt to increased water stress.*

We have to be realistic about our contribution to fighting climate change. Stabilizing the world's CO<sub>2</sub> emissions is an enormous task that no country let alone business can solve alone. Although Grundfos is a world leader in the pump industry and has high growth targets, we are still a medium sized company.

We need to choose our initiatives carefully and focus our resources where we can contribute the most. We have to find a niche where we can apply our expertise, exhibit leadership, and inspire others to follow our lead. For example a large part of the solution to the climate challenge is to grow renewable energy production. But while we will seek to power our plants with renewable energy, Grundfos will not become a renewable energy provider. We do not have the core competencies to enter into this business. Rather part of our contribution will be to make our pumping systems compatible with renewable energy generation such as solar or wind.

Tackling the climate challenge has two aspects. In finding our niche we need to carefully consider the options within both of these. First of all we need to reduce – mitigate – the extent of future climate changes. But that is not sufficient. Even if the world stopped emitting CO<sub>2</sub> tomorrow, temperatures will continue to rise for a while. Therefore we also need to adapt to the climatic changes already set in motion.

**Box 6: The two aspects of tackling the climate challenge**

To consider our contribution, we of course need to reduce the carbon emissions from our own business processes. However given the nature of the business we are in, we also need to look beyond our own company. The products we produce are part of systems that are essential to life. They help provide basic infrastructure and quality of life to people throughout the world. Therefore we also have a responsibility to help ensure that the systems, in which our products are part, operate with the least possible impact on the environment.

Finally we also have the potential to help the world adapt to the effect of climate change on our water resources. Being part of water solutions that decrease water stress or alleviate the pressure on water ecosystems offers economic benefits for Grundfos and at the same time we help reduce the impact on the environment.

To maximize the impact of our efforts, we will engage more closely with our stakeholders to both develop solutions and address the larger issues within the climate debate. By focusing on how our core capabilities can be employed in larger collaborations we can maximize impact not just for ourselves but for the climate as well.

## 2. OUR ROLE AND CONTRIBUTION

Grundfos needs to respond to climate change with a firm, coherent course of action. It is vital that our entire organization is aware of our role and contribution in this regard. Guided by the five principles described above, we will continue to build on Grundfos' core values and capabilities. We will continue down the path the Innovation Intent has laid out, putting sustainability first.

Grundfos will go further down the path of sustainability than what will be legally required, and well beyond the average company. We will seize the initiative now, striving to become a role model for how to make climate considerations a premise for business operation and development. Reaching this vision requires a long-term effort and includes all our global activities. Our plan for getting there, therefore requires action on two general levels:

*1. Grundfos will enact change throughout our own organization to decrease the environmental impact of our operations.*

In a global context, the environmental imprint of Grundfos' operations is limited. Therefore, the emissions we can avoid and the water we can save by rationalizing our operations is not in itself sufficient to counter the climate challenge. Still there are a number of reasons why it is vital that we start by focusing on our own business.

First, we must take our own medicine. Grundfos risks not being seen as a trustworthy partner for customers that want to lower their environmental impact if we do not at the

same time do everything we can to lower our own environmental impact. We need to be able to prove to our customers that we are a sustainable company.

Second, by working to reduce our own environmental impact, we will also change the mindset of our organization. By exhibiting leadership and becoming a greener company, we will develop a greener mindset. This will help us create the kind of products and services that can help our customers reduce their environmental impact and grow our business.

Finally, by doing our share we will set an example for others to follow. If no business reduced their environmental imprint, the world would never be able to overcome the climate challenge. We believe we can inspire others to follow our lead by honestly and transparently communicating our efforts and results.

*2. Grundfos will enact change beyond our own company through our products, services, and organizational voice.*

Being truly committed to help the world face the climate challenge, we also need to look beyond our own operations. Our area of business touches on several of the most important climate related issues. We therefore have a potential to facilitate a reduction in CO<sub>2</sub> emissions and increased adaptation to the effects of climate change through our products, services, partnerships and organisational voice. In the long term, this is where we can create the greatest impact.

One key challenge in fighting climate change is breaking the vicious, self-enhancing cycle between water stress, energy use, and carbon emissions. Water-related energy use is already significant, escalating along with a growing and increasingly affluent world population. In the US alone, water related energy use accounted for approximately 13% of the total electricity use in 2008, emitting the equivalent of 62 coal-fired power plants<sup>10</sup>. Future climatic changes will only further stress our water resources and increase water-related energy needs.

**Box 7: The vicious circle of climate change, water stress, and energy consumption.**

Climate change increases water stress and the risk of flooding. This increases the need for treating and moving water. This again increases the amount of energy required to ensure sufficient amount of freshwater and avoid flooding. In turn this increases the carbon emissions, which reinforces the vicious cycle.



As a global leader in pump solutions, Grundfos has a unique position to take on this problem. By helping increase the cost- and energy-efficiency of water solutions, Grundfos can help secure the worlds water resources without exacerbating the climatic changes that threaten water supplies in the first place.

Another key challenge is the energy consumption and the associated CO<sub>2</sub> emissions from residential- and commercial buildings. Energy use in buildings is one of the biggest

<sup>10</sup> Bevan Griffiths-Sattenspiel and Wendy Wilson, "The Carbon Footprint of Water", River Network, May, 2009

contributors to climate change accounting for more than 15% of global CO<sub>2</sub> emissions.<sup>11</sup> With core capabilities in energy-efficient fluid systems we can help increase the overall energy-efficiency in buildings in collaboration with other stakeholders.

We could choose to ignore the climate challenges associated with increasing energy and water demand. We could celebrate the fact that unrestrained climate change might intensify the world's water problems and increase the demand for pumps and pump-systems. But such an opportunistic position would compromise the values that are at the heart of our company and be out of touch with our customers. In addition, we believe that in the future, demand will increasingly shift towards solutions with low climate impact. Acting on climate change is therefore not only the right thing to do – it is also where the real business opportunities of the future lie for Grundfos.

To ensure that our intent to combat climate change amounts to more than words, we have defined a number of ways in which Grundfos will actively contribute.

**Box 8: Grundfos' contributions**

- We will reduce our carbon footprint
- We will investigate and reduce carbon emissions over the entire lifecycle of our products and services
- We will investigate and reduce our water consumption throughout our value chain
- We will grow the demand for energy-efficient pumps, systems and solutions
- We will help the world adapt to climate change, water scarcity and a low carbon economy
- We will do our part to raise global awareness of the link between water, energy and climate change

## 2.1 We will reduce our carbon footprint

The first step towards becoming a model corporate citizen is reducing the carbon footprint from our business processes. We will look throughout our organisation to find new ways to reduce the carbon emissions from our own processes. It will require a broad range of approaches, mobilizing our entire organization. We need to keep using our imagination to increase the energy efficiency of our operations, and develop a corporate culture where environmental responsibility is prioritized.

In addition, Grundfos will seek to reduce the emissions associated with the construction of our products all the way from 'cradle to gate'<sup>12</sup>. Just as we must be able to vouch for the quality of the materials and services we use, we must be able to vouch for their environmental friendliness. We are therefore committed to finding ways to reduce our entire carbon footprint, including both the direct emissions created by our own operations and the indirect emissions that stem from the materials we use in our production.

<sup>11</sup> Electricity and heating in residential buildings account for 9,9% of global GHG emissions while electricity and heating in commercial buildings account for 5,4% of global GHG emissions (World Resource Institute)

<sup>12</sup> Cradle-to-gate is an assessment of a partial product life cycle from manufacture ('cradle') to the factory gate (i.e., before it is transported to the consumer).

## **2.2 We will investigate and reduce carbon emissions over the entire lifecycle of our products and services**

Our products have environmental effects that stretch well beyond the emissions associated with our own operations or even those of our suppliers. The large majority of the carbon emissions from pumps are associated with their energy consumption during use. Therefore, we must help increase the carbon productivity of our products and the systems in which they operate. That way, we can make a much bigger contribution to the global fight against climate change, than if we only focused on reductions in our own operations.

By conducting Life Cycle Assessments of the emissions of all our offerings we will identify ways to reduce the CO<sub>2</sub> emissions of not just of ourselves but of our customers as well. These assessments will help us know where to prioritize our efforts. Only by identifying which products create the greatest emissions and where, will we be able to find the most effective ways to reduce the emissions associated with our products, creating additional value for our customers.

## **2.3 We will investigate and reduce our water consumption throughout our value chain**

Due to the intricate link between water, energy and climate, we must investigate our impact on the world's water resources in addition to our carbon emissions. We will seek to identify the source, type and volume of water<sup>13</sup> used in our business processes. That will enable us to identify the areas where we should prioritize reducing our water consumption.

We will also investigate the water use associated with every phase of our products' life cycle to gain a better understanding of how our water use impacts the environment on both a global and local scale. By looking at the entire life cycle of our products, we will not only be able to identify areas for improvement in our own operations, but help our customers and suppliers address the water issue as well.

## **2.4 We will grow the demand for energy-efficient pumps, systems and solutions**

Grundfos can substantially help our customers to reduce carbon emissions by replacing older pumps and pump designs with newer and more energy-efficient ones. The internationally recognized independent organization Europump estimated that changing all the D-labeled pumps in Europe to A-labelled models would save 44 billion kWh every year. That is the same as the total power output of five large power plants. And that is for Europe alone.

But increasing the efficiency of installed pumps and pump systems will not be easy. Currently, many customers are mainly concerned with price and performance and have little consideration for the environmental effects of new water solutions. Even for customers with a clear environmental agenda, many are unaware of the potential benefits of increasing the energy efficiency of pumping systems.

In the future, Grundfos will continue to help to grow the demand for energy-efficient pumps, systems and solutions. We must drive demand by educating our customers and the public

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<sup>13</sup> The environmental impact of using 1 liter of water varies greatly depending on whether the source is an arid area with few water resources or a place where fresh-water is abundant. In addition, the type of water is important, as it for example is less detrimental to use rainwater rather than distilled drinking water for many industrial processes.

about the benefits of the most energy-efficient pumps, systems and solutions available. This includes training our sales force to become better at communicating the environmental benefits of our products. Helping our customers to become environmentally responsible and save money on their energy bills will not only help fight climate change, but also grow both their and our bottom line.

### **2.5 We will help the world adapt to climate change, water scarcity and a low carbon economy**

Climatic changes will generate demand for solutions that can solve new types of water related problems. We expect that due to the adverse effects of climate change, services like flood protection, water transportation and water filtration and treatment will increasingly be needed in the future. There is a great business potential in developing solutions that can move and treat water more efficiently to help counter these effects and in order to capitalize on this, Grundfos must be proactive now.

We must leverage our organizational capabilities to develop solutions for a low carbon economy beyond merely pumps and related systems. New business areas like NoNOx, LIFELINK and Biobooster are all examples of how our knowledge and expertise can be readily applied to the world's problems in new innovative ways. In the future we must accelerate the development of new solutions and initiatives that have the potential to help the world reduce emissions, adapt to climate change and reduce water stress. We have to be there for a growing world since many emerging markets will be among the most vulnerable to climatic changes.

### **2.6 We will do our part to raise global awareness of the link between water, energy and climate change**

Addressing the issues of energy-efficiency, water stress, and flood management is a global task. Solving these issues therefore requires a global approach. Governments, businesses and organizations need to come together and create the overall framework that will help the world solve these issues.

While we can only do so much on our own, Grundfos has an important role to play. It is natural that we, as a leading company within water pumping, water handling and water circulation share responsibility and join other water professionals in an attempt to care for the water in this world. We possess valuable knowledge that can contribute to more effective water management on a global scale.

We will strive to draw attention to the world's water issues and their relationship to energy-efficiency and climate change. We will help create awareness of the technologies that are already available for transporting, purifying, filtering and handling water in a sustainable manner.

We will do our best to leverage our expertise and authority to educate the public, motivate politicians and influence the global media agenda. Because raising awareness about the necessity of energy-efficient water solutions is bound to benefit both the environment and our business.

### 3. OUR COMMITMENTS

Grundfos has a history of acting as a sustainable company and we will continue to build on this in the future. But to fulfill our ambition of being a trustworthy sustainable partner for our customers, we need to step up our efforts in this direction. Therefore we have identified four commitments that will anchor our climate efforts:

- Take our own medicine
- Innovate new sustainable products and solutions
- Encourage a green mindset
- Influence the global agenda

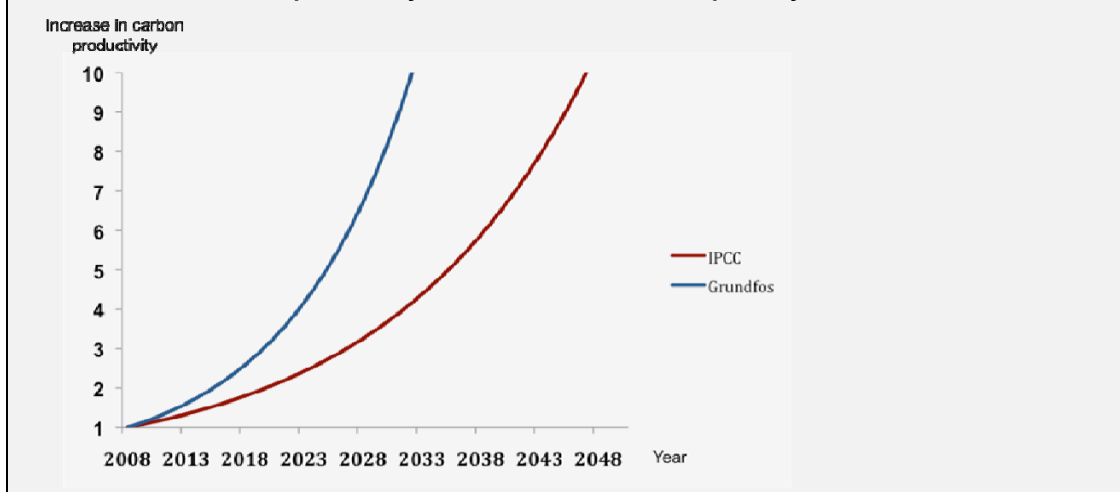
#### 3.1 Take our own medicine

*We will stabilize our corporate CO<sub>2</sub> emissions, map the total emissions throughout our value chain, and define specific targets for reducing our water footprint.*

With the creation of our CO<sub>2</sub> footprint in 2009, we have already taken the first step towards reducing the CO<sub>2</sub> emissions of our company. Through detailed accounting of our CO<sub>2</sub> emissions we will keep track of our progress and identify the areas with the greatest potential for improvement<sup>14</sup>.

Grundfos has pledged never to emit more CO<sub>2</sub> than we did in 2008<sup>15</sup>, even though we expect rapid growth. Our goal to stabilize our CO<sub>2</sub> emissions is an ambitious one. If we grow our business according to the targets set out in our innovation intent, we will have to increase our carbon productivity dramatically. In fact we will move well beyond the baseline carbon productivity the IPCC claims must become the global average if warming greater than 2°C is to be avoided.

**Box 10: Grundfos' carbon productivity will increase faster than required by IPCC**



<sup>14</sup> Grundfos' CO<sub>2</sub> emissions include manufacturing processes, building operations and logistics, which is defined as the transportation of goods & people between own operations as well as from/to suppliers/customers.

<sup>15</sup> See Grundfos' "CO<sub>2</sub> Footprint" for further reading.

To reduce our CO<sub>2</sub> emissions we will first and foremost optimize our business processes. We will search for optimizations in all business areas and provide tools and support for local management to identify local solutions with the greatest impact.

We will reduce the energy consumption and increase the energy efficiency of our **manufacturing processes**. We will reduce the energy consumption in our **buildings**, and we will reduce the CO<sub>2</sub> caused by **transportation** of goods and people.

Our second priority to reduce our CO<sub>2</sub> emissions is to increasingly source **renewable energy**. Part of this includes on-site energy generation.

For Grundfos, **carbon offsetting is the last resort**. We will only use offsetting to reduce our CO<sub>2</sub> emissions if we cannot fulfill our ambitions by optimizing our processes and sourcing renewable energy.

Renewable energy and carbon offsetting projects should be carefully selected.

We must ensure that if not for Grundfos' investment, these projects would not have been realized. That is the only way to make sure our investments are directly translated into *additional* reductions of CO<sub>2</sub> emissions, growing the global supply of low-carbon technology rather simply paying for reductions that would happen anyway. We will only choose projects where we believe it is viable that the project will deliver the promised emission reductions. Therefore we will not choose renewable energy and carbon offsetting projects purely based on price.

We also commit ourselves to extend our responsibility to cover the entire product- and service lifecycle. Hence we will strive to reduce the embedded carbon in product development by rethinking packaging and the choice of materials and their recyclability. Furthermore we will conduct Life Cycle Assessment of our products to identify where and how we can reduce CO<sub>2</sub> emissions most efficiently.

Finally in our CO<sub>2</sub> footprint, we have also included our current commitment to reduce our water consumption. Grundfos has been steadily reducing the water consumption of our business processes. For example, between 2000 and 2008 we reduced our water consumption by 34%, exceeding our target of a 30% reduction. Currently our 2015 target is that more than 30% of the water consumption in all existing Grundfos buildings should stem from the reuse of grey wastewater and rainwater harvesting.

In the future, we need to intensify our efforts to map and reduce our water consumption. We will continue to update our targets ensuring that we do our utmost to preserve water resources, especially in the regions where water scarcity is most acute.

#### 2010 Commitments: Taking our own medicine

- We will stabilize our corporate CO<sub>2</sub> emissions, never emitting more CO<sub>2</sub> than in 2008
- It is our long term ambition to become carbon neutral
- We will develop our ability to calculate the entire life cycle emissions of our products
- We will define specific targets for reducing our water footprint

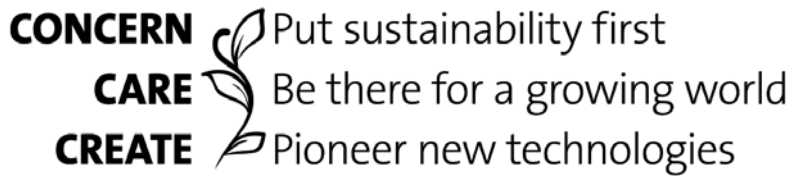


### 3.2 Innovate new sustainable products and solutions

*We will actively search for climate related breakthrough products and services, prioritize R&D projects that help the world become more sustainable, and develop sustainability metrics for assessing new R&D investments.*

With the creation of our Innovation Intent, we have defined the goal for our innovation toward 2025. Every major concept that we launch over the next 20 years should meet all three of the challenges embraced by our Innovation Intent.

GRUNDFOS THINKING ABOUT TOMORROW



To meet the ambitions of our Innovation Intent, we have developed three innovation platforms that define the direction for future innovation and help Grundfos prioritize investment and focus.

**Box 12: Our Three Innovation Platforms**



**Future Homes and Living in China**



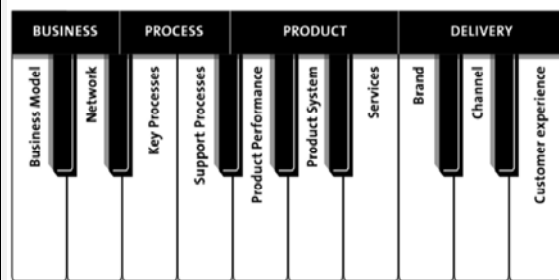
**Zero Impact Commercial Buildings in the USA**



**Rethink Decentralized Water Treatment Solutions for Process Industries**

We need to use sustainability as a driver for innovation throughout all business areas. Grundfos has a tradition for inventing some of the most energy-efficient pumps and were the first to bring an A-labeled pump to market. Yet Innovation is more than simply developing new products. In order to deliver on our commitments, we must apply all ten types of innovation. Putting sustainability first can help us innovate everything from business models to brands and deliver the dramatic growth we strive for.

**Box 13: The innovation piano (10 types of innovation)**



After years of constant innovation, many of our pumps operate with a high degree of energy-efficiency. In the future, we will carefully investigate what types of innovation are required to unlock market potential for the various segments in which we operate. It could be that in some segments priority should be given to improve the energy efficiency of the pump, while in others the greatest efficiency gains lie elsewhere in the system.

We need to be even better at helping our customers choose the pump solutions that will create the most effective systems. We have already begun this journey by for example providing energy counseling to Chinese district heating companies and conducting energy audits. But we need to accelerate our efforts in this direction and broaden our scope.

By collaborating on system-wide solutions, we can make greater energy-efficiency gains than we would be able to on our own. Often our pumps are small components inside large systems with ample potential for optimization. Therefore we must open our innovation procedures to develop new pump systems in collaboration with our customers and suppliers who have core capabilities that compliment our own. We will broaden our scope, moving beyond delivering pumps to partnering on the creation of comprehensive fluid systems.

Delivering on our innovation intent, we also need to make substantial investments. In recent years, Grundfos has devoted more resources into developing new types of water solutions. For example in Grundfos New Business we currently work on biological wastewater treatment systems. The demand for this type of solutions will increase in the future and we need to establish a strong foothold.

We will also carefully monitor climate-related regulation in order to anticipate and shape new business models and products that fit with legislation. For Grundfos, climate regulation is not only about compliance, it is also a source of new business opportunities. By reimagining the logic of our business models we will be able to unlock new growth opportunities.

#### **2010 Commitments: Innovating new sustainable products and solutions**

- Every year, we will process many possible inventions in relation to climate change with the aim of commercializing 1-3 of these into breakthrough products and services
- From 2010, all new R&D projects must be associated with products and services that help the world become more sustainable
- We will develop sustainability metrics for assessing new R&D investments, maintaining focus on the long-term bottom line but being more patient about the pay back time

### **3.3 Encourage a green mindset**

*We will create a global framework for our sustainability programs to ensure direction, coherence, and support for local initiatives and we will develop methods to make it easier for our employees to personally engage in the climate challenge.*

Grundfos' most important assets are our employees. We have a history of applying a bottom-up approach to problem solving, inviting the entire organisation to help find the best solutions. In this regard, the climate challenge is no different. Grundfos' corporate culture has long been marked by a commitment to sustainability and our employees have been a central part of the development of most new sustainability initiatives.

Grundfos employees have for years been encouraged to share their ideas on how to reduce Grundfos' negative impact on the environment. In 2008 alone, our employees submitted more than 4,000 suggestions for environmental, health and safety improvements of which more than 3,000 were implemented. As an added incentive, the Future Now Award is given annually to the company that has implemented the best green initiative – big or small. By focusing initiatives around the offspring of the creative minds of our employees, we facilitate ownership and increase participation rates, while inspiring our employees to think green.

Throughout the world, Grundfos initiatives promote green behavior in a large variety of ways. With local initiatives like 'walk-to-work' programs in the UK, 'Lunch and Learn' sessions about environmental topics in the US, and incentives for employees who save paper, water and electricity in China, Grundfos Companies throughout the world have initiatives that encourage their employees to take environmental action. Some of the initiatives may be small, but every single one of them are serious, meaningful and relevant to the process of making Grundfos a greener company.

A green corporate culture will also be more effective at innovating green offerings. Some might argue that encouraging small acts such as printing double sided, or walking to work have negligible impact in the context of the immense environmental challenge we face. However, even the smallest actions will help make sustainable thinking a habit permeating everything we do. By encouraging environmentally conscious thinking among our employees we are disseminating a green mindset, which can help drive the development of new sustainable products and services in the future.

In the future, Grundfos will continue to do its part to facilitate the global change in behaviour and consumption patterns that are needed to fight climate change.

We will develop a range of methods that will make it easier for our employees to personally engage in the climate challenge not only at work, but in their private lives as well. The principle of this engagement is voluntary action. We will not force our employees to act in a more sustainable manner. Rather we will simply provide opportunities for everyone to become stewards of the environment.

This means that new sustainability programs should include **incentives** for employees to act sustainably also in their free time. In time this could for example amount to a discount to employees who want to drive a hybrid car or power their home with renewable energy. By making it easy for our employees to minimize their environmental footprint, Grundfos will help its 17,000 employees as well as their families transition towards a low-carbon economy.

Future initiatives should also take a **greater philanthropic focus**. For example by providing employees with an option to become part owners of Grundfos Life Link services or to create donation-matching programs for employees wishing to give to relevant charities. This way we can help promote a culture where our employees increasingly take responsibility for the world.

It is essential that our sustainability programs across the world do not lose focus. In implementing new programs, Grundfos will therefore seek to **create frameworks and targets**

to ensure a coherent global approach. We will create programs that provide local management with the necessary **direction and support**. Yet in order to retain local ownership and participation, our programs should give local managers the freedom to customize local solutions.

**2010 Commitments: Encouraging a green mindset**

- We will create a global framework for our sustainability programs to ensure direction, coherence, and support for local initiatives
- We will make our sustainable offerings more visible
- We will update our compensation scheme for sales to incentivize selling our sustainable offerings and develop a roadmap for educating our sales force to sell these
- We will develop a selection of methods to make it easier for our employees to personally engage in the climate challenge

### **3.4 Influence the global agenda**

*We will engage with our external stakeholders and raise awareness about the connection between, water, energy, and climate change and related issues – particularly beyond the European markets.*

Grundfos strives to take responsibility as an active participant in the global debate on sustainable development. In Europe, and Denmark in particular, Grundfos has long been vocal in shaping the public and political agenda on energy-efficiency and other relevant issues.

For example, we recently helped draft new European regulations to reduce the electricity consumption of industrial motors. These motors account for approx. 30-40 percent of the world's total electricity consumption, and the European Commission has calculated that the regulation will result in a reduction in electricity consumption of 5% in 2020. This amounts to 135 TWh – equivalent to the entire annual electricity consumption of Sweden

Grundfos has also been a vocal proponent of the establishment of a voluntary A to G energy labelling for circulator pumps. The circulator pump is one of the main consumers of electricity in the home, comparable to a fridge-freezer or household lighting. Yet, homeowners are largely unaware of the impact a low energy circulator has on their electricity consumption. Energy labelling standards will help increase the transparency of our industry and likely encourage customers to choose more energy-efficient models.

In Denmark, Grundfos played a decisive role as chairman of The Danish Council for Sustainable Business Development, taking part in the formulation of the Danish government's action plan on corporate social engagement.

We engage in partnerships, teaming up with other companies and organisations to find ways to combat climate change. For example, as a member of The World Business Council for Sustainable Development, Copenhagen Climate Council and The Confederation of Danish Industry, Grundfos has influenced the political life ahead of the UN COP15 summit on climate change in Copenhagen.

So far, most of our efforts to influence policy and shape the public agenda have had a Danish or European focus. In Denmark in particular, we are well respected for our sense of environmental responsibility, and recognized as an authority on subjects such as energy-efficiency and water conservation.

In the future, we hope to exert influence on the public and political agenda **beyond Europe** as well. We increasingly want to become a voice for change in America, Asia and Africa within relevant debates. We will work hard to raise global awareness about the consequences of the vicious circle between water stress, energy-use and climate change, and other sustainability issues relating to our business.

Influencing the global agenda involves three venues for action.

First, we will increasingly seek to **influence legislators** across the world by producing policy reports, perspectives and recommendations and providing expert testimonies to politicians we can help shape future legislation on the topic.

Second, we will increasingly seek to **raise the public awareness** by producing educational materials, publishing research, and running campaigns in the media. In the past we have successfully collaborated with Danish educational institutions and in the future we will increasingly seek an international audience for such efforts.

Third, we will seek new ways to leverage our **partnerships**, and memberships in environmental organisations to set the agenda and induce change. We need to ensure a better fit between our climate strategic goals and the partnerships, sponsorships and other collaborative efforts we engage in. By prioritizing the engagements with the best climate strategic fit, while abolishing those with marginal impact, we will free up resources to make a difference where it counts.

In the future we should remain open to partnering with anyone – even our competitors – in order to affect legislation and raise climate concerns relating to our industry. But we should also scrutinize potential engagements, examining our potential for impact within that forum, and its overall fit with our strategic goals.

#### 2010 Commitments: Influencing the global agenda

- We will create a road map for proactively and globally promoting the nexus between water, energy and climate change in public and political forums as well as in industry associations and other external stakeholder environments
- We will review our participation in all our existing partnerships, networks, and industry associations to create alignment with our climate strategic goals

## 4. REPORTING ON OUR PROGRESS

Clear, coherent communication is essential to delivering on our climate related commitments and priorities. In the future, climate and sustainability issues will permeate all our activities and it is essential that we effectively communicate our achievements in this regard. Therefore

we will strengthen our capabilities within strategic communication and public relations, especially in the US and emerging markets.

To ensure our climate communication truly reflects our perspectives and ambitions, all our communication on climate change should follow three basic tenets.

#### **4.1 Be honest and transparent**

For Grundfos, open and credible communication is a core value that should permeate everything we do. It is imperative that we approach and discuss the climate issue in an honest and transparent manner. We should promise what we can deliver but no more. On the other hand, it will not be enough to do things properly if we do not also show what we do.

With regards to as contentious an issue as climate change, providing full transparency is more important than ever. We need to be open about our own environmental performance, also when things do not go as planned. We must stick to the facts while providing our stakeholders with comprehensive information about the environmental performance of our products and services.

Grundfos must be incredibly accurate when communicating the environmental performance of our company and products. The current discourse on climate change is awash with claims of superior environmental performance – many of which are exaggerated or misleading. Grundfos will never engage in this kind of ‘green-washing’<sup>16</sup>. Not only would such conduct contradict our core values but it would also put our hard-earned reputation as a trustworthy and serious business partner at risk. Therefore the potential short-term gains from dubious or ambiguous claims will never justify the immense long-term business risk involved in such behaviour.

#### **4.2 First issues, then products**

Grundfos will increasingly engage in public affairs to raise awareness about our perspective on climate change. We will focus on making people understand the full scope of the water-energy-climate nexus. This is important not only in order to encourage the world to act, but also to provide the context within which our sustainable solutions and offerings provide the greatest value.

In our efforts to help shape the international agenda it is crucial that we address local and global climate-related issues. In the public forums, promoting our own solutions and services should be a secondary concern. This does not mean that mean we will stop promoting our own solutions. But in public forums, we increasingly need to move beyond discussing the relative merits of different brands and products to become an active proponent of energy-efficient water solutions and other mitigation and adaptation strategies. Only then will we become recognized as a serious and responsible contributor within the climate debate.

Educating the world about the connection between water, energy and climate will help grow the demand for sustainable solutions. As a market leader in energy efficient pump solutions, we therefore have more to gain by, for instance, educating about the societal need for

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<sup>16</sup> Green-washing is defined as the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service (TerraChoice Environmental Marketing Inc.)

increased energy and water conservation, than by merely explaining why Grundfos' pumps are the best. Therefore, we must increasingly invest our resources to position ourselves as a trusted authority within the water-energy-climate nexus.

#### **4.3 Communicate the good stories**

At Grundfos we must become better at communicating our successes. An increased emphasis on public affairs does not mean we will stop communicating our internal achievements or the benefits of our products and services. But we need to be aware of when to highlight our products and when not to. We should focus on communicating the tangible results and benefits that our products have on climate change related issues. And we must remember to always frame our offerings within the context of the global and local challenges at hand.

We aim to maximize the effect of communication our achievements. Therefore we must align the messages and examples we use throughout our organization to ensure both consistency and recognition in the eyes of our external stakeholders.

In the future we must become better at conveying our success stories through third parties. Particularly in markets where we have a limited presence, we can benefit from partnering with customers, industry associations, legislators, and NGOs to amplify our communication about the environmental effects of our products and our own operations.

To achieve this, it is essential, that we have an active information policy and systematically tell the relevant interest groups what we are doing and why. Only if we keep our stakeholders informed can we hope to provide an example for others to follow, capitalize on the demand for sustainable solutions and be a vocal actor within the debate on water, energy and climate change.

#### **2010 Commitments: Reporting on our progress**

- We will become better at effectively communicating our successes, aligning the messages and examples we use throughout our organization
- In public forums, we will address local and global climate-related issues prior to promoting our own solutions
- We will provide full transparency about our own environmental performance, also if things do not go as planned
- forums as well as in industry associations and other external stakeholder environments
- We will review our participation in all our existing partnerships, networks, and industry associations to create alignment with our climate strategic goals

## **5. OUTRO**

We trust that this climate white paper has explained the framework we will employ to tackle the issue of climate change and we hope that you as an employee at Grundfos has been inspired to take on the climate challenge.

While the overall direction for future climate related initiatives at Grundfos is clear, we now need to define the metrics and actions that will help us deliver on our commitments. This will be our focus in the time to come.