Celebrating 100 years of vitamins
Dear Reader,

The year 2012 is the 100th anniversary of vitamins – 100 years since Polish scientist Casimir Funk coined the term “vitamin” to describe bioactive substances essential for human and animal health. During this time, our understanding of the vital role of vitamins in both nutrition and personal care has grown considerably.

To celebrate this anniversary, DSM and our nonprofit nutrition think tank, Sight and Life, have launched the ‘100 Years of Vitamins’ campaign to celebrate the century of contributions that micronutrients have made in protecting and improving human and animal health.

Vitamins are essential for good health throughout every stage of the human lifecycle: from pregnancy through infancy and childhood, and into adulthood and old age. Our bodies need vitamins to grow, to function, to stay healthy and to prevent the onset of disease.

However, despite the clear evidence, most people have low vitamins status. One billion people – one in seven – suffer from a lack of access to adequate food and at least two billion people around the world experience “hidden hunger,” and do not receive a satisfactory intake of vitamins. Even in the developed world, where nutritious foods are more plentiful, shifting patterns of diet and lifestyle are leading to ever growing nutritional gaps.

The impact of hidden hunger in both the developed and developing world is enormous. Globally, stunted growth and anemia in children are major causes of health problems later in life, including the increasing burden of obesity and chronic diseases. Hidden hunger negatively impacts individuals, communities, health systems and economies.

It is essential that we also raise awareness of the benefits of vitamins among both decision makers and the general public. An additional objective of the campaign was therefore to build a much greater understanding amongst key audiences of the role and importance of vitamins in terms of public health, and highlight the importance of improved access to these micronutrients so that everyone has a chance to build a healthy and prosperous future.

Much has been achieved: a number of events have taken place around the world on the role of vitamins in health and wellness; there has been wide ranging media coverage in Europe, Asia and the Americas; and, crucially, our advocacy activities have helped to place vitamins higher up the agenda of key decision-makers.

We have not done this alone. Focusing on a range of topics, from vitamin A blindness through pregnancy and motherhood to osteoporosis, we have partnered with a number of organizations: NGOs, nutritionists, academics, and charities. The campaign could not have had such a positive impact without such dedicated and expert partners.

As a company, DSM is committed to ensuring that our bright science is translated into brighter living. We will therefore continue to be a powerful advocate for the importance of nutrition and ensuring that the benefits of vitamins and other nutrients are fully understood and acted upon around the world.

We look forward to building on the ‘100 years of vitamins’ campaign in order to ensure another century of improved health and prosperity for us all.

Kind regards,

Dr. Manfred Eggersdorfer, Senior Vice President Nutrition Science & Advocacy, DSM Nutritional Products
Dear reader,

We have come a long way in the past 100 years. Now we recognize that vitamins do far more than just prevent classic nutrient deficiency diseases, which are uncommon in the developed world. Many Americans, for example, are marginally deficient in one or more vitamins. That means they consume enough to prevent the classic deficiency, but not enough to be optimally nourished. Marginal deficiencies smolder under the surface and result in compromised health in a subtle way today and serious conditions later in life. Osteoporosis is a good example. Get some, but not enough vitamin D, and over the course of a lifetime your bones slowly lose calcium until they no longer can support your weight, yet there are no tell-tale signs in the meantime.

The irony is that if you ask people how they think they are doing diet-wise, most people will tell you they know they don’t eat perfectly, but feel they do OK. I’ve found that most people are misguided. In fact, 99 out of 100 people don’t meet even minimum standards of a balanced diet, according to FDA data, yet nine out of 10 think they are doing pretty well.

Marginal deficiency symptoms are subtle, but they can have a significant long-term impact. For instance, low vitamin B12 leads to memory loss and low intake of folic acid can contribute to cancer, as well as memory problems and birth defects.

I have a four-step supplement program to make sure we are combating marginal deficiencies and supplementing responsibly.

• Select a broad-range multiple that supplies as close to 100 percent, but no more than 300 percent, of the Daily Value for a wide variety of vitamins and minerals. A multiple should complement an excellent diet and fill in the gaps on days when you don’t eat perfectly. It’s not a substitute for a healthy diet, it’s a supplement.

• Add a separate calcium plus magnesium supplement. You need calcium to keep your bones, skin, nerves, and muscle in tip top shape, while magnesium is critical for coping with stress, maintaining a healthy heartbeat and blood pressure, and improving muscle, nerve, and bones. Unless you include at least three servings daily of calcium-rich milk products or fortified soymilk and lots of magnesium-rich soybeans, nuts and wheat germ, you should supplement these two minerals.

• If your multi or calcium does not have at least 1000 IU of vitamin D, then consider a separate vitamin D supplement since you can’t get enough from food and optimal intake is associated with lowered risk for muscle weakness, gum disease, diabetes, insulin resistance, arthritis, multiple sclerosis, hypertension and certain cancers, including colon, breast, pancreas, and prostate cancers.

• If you don’t consume at least two servings a week of fatty fish, such as salmon, mackerel, or herring, then take a DHA omega-3 supplement. You need at least 220mg of DHA, and possibly up to 900mg/day to lower the risk for heart disease (the number one killer for both men and women), depression and possibly even lower Alzheimer’s risk by 70 percent.

One obvious sign that you may not be meeting the recommended daily amounts of the essentials is your mood - food and mood go hand in hand. As I always point out, if you don’t feel great, then take a look at your plate. You may need to add a few extra servings of colorful fruits and vegetables and a supplement program to help boost your nutrition and mood.

The ‘100 Years of Vitamins’ campaign – and in particular the Basel Symposium – has served as an important platform to discuss the role of vitamins in human health, bringing together professionals and experts to look at how vitamins help with health and wellbeing.
Our combined expertise in nutrition has, for example, been used to produce a number of publications for a variety of audiences. These include a new Sight and Life book on vitamin A deficiency – The Vitamin A Story: Lifting the Shadow of Death, by Professor Richard D. Semba of the Wilmer Eye Institute at the Johns Hopkins School of Medicine. The book details how a lack of vitamin A can lead to eye conditions that affect millions, leading to blindness and diseases that can prove fatal. Exhaustively researched and documented, it is written for intellectually curious lay readers as well as for public health professionals, nutritionists and historians of science and medicine.

DSM also continued its work with the International Osteoporosis Foundation, launching interactive maps of vitamin D status worldwide. These maps bring together data from 200 single studies from 46 countries all over the world, and show the extent of vitamin D insufficiency in both the developing and industrialized world. Moreover, a new assessment was published in the British Journal of Nutrition, which suggests that 75% of the population in Germany, the UK and the US, does not meet the dietary intake recommendations of the respective countries for a number of essential micronutrients.

In addition, a number of events were organized around the world. These included a conference in London as part of Biology Week, in partnership with King’s College and the British Heart Foundation, looking at the role of vitamins in understanding complex diseases. DSM also organized a symposium in Basel, Switzerland, to celebrate the 100th anniversary campaign and the way forward, bringing together world renowned experts to discuss the benefits of vitamins and their role in health and wellness. Our efforts also stretched beyond the developed world, including an event organized in partnership with the Chinese Nutrition Society.

We also used our voice, expertise and network to engage in advocacy programs, notably around the Hunger Summit, the UN General Assembly on non-communicable diseases, and World Food Day. This has allowed us to engage directly with decision makers and key stakeholders about the importance of vitamins. As part of this outreach, we were able to work with U.S. Congressman Frank Pallone (D-NJ) to recognize the benefits of vitamins in the Congressional Record, referencing the work of Casimir Funk in growing our knowledge of the benefits of vitamins in health and wellness throughout the human life cycle.

Recognizing the importance of the print, broadcast and online press – we succeeded in reaching out to wider audiences. The campaign received extensive media coverage in specialized and general outlets, in the US and Europe and in developing countries in Asia and elsewhere. A selection of the coverage is provided in this brochure.
DSM conmemora los 100 años del descubrimiento de las vitaminas
Eurocarne, 24 May 2012

En 2012 se cumplen 100 años del descubrimiento de las vitaminas. En 1912, el bioquímico polaco Casimir Funk acuñó el término vitaminas para describir las sustancias esenciales para la salud de las personas y de los animales. Avances científicos posteriores, permitieron identificar 13 vitaminas y descubrir muchas de sus funciones en el organismo.

Durante 100 años, el término “vitamina” se ha utilizado para designar un grupo de micronutrientes orgánicos esenciales, que desempeñan una gran diversidad de funciones vitales en nuestro organismo. La mayoría de las vitaminas no pueden ser producidas directamente por el mismo, y por tanto, deben ser incorporadas en la dieta (excepciones: niacina y vitamina D). Ya en el siglo XXI, con estilos de vida modernos, también es común la ingesta inadecuada de vitaminas.

DSM colabora con organizaciones tales como el Programa de Alimentación Mundial (WFP – World Food Programme) y la Fundación Internacional de Osteoporosis (IOF), promoviendo el papel fundamental de los micronutrientes en la promoción de la salud. Por todo esto, DSM trabaja con instituciones líderes en todo el mundo, en la investigación y en el desarrollo de una nutrición animal óptima, ofreciendo soluciones a sus clientes con el suministro de premezclas de vitaminas esenciales para hacer frente a la creciente demanda de proteínas de origen animal, así como en beneficio de la salud y la sostenibilidad de la cadena alimentaria en su conjunto. En palabras de Manfred Eggersdorfer, vicepresidente senior de Nutrition Science & Advocacy en DSM “en DSM, estamos orgullosos de haber formado parte de la jornada de vitaminas para la nutrición y la salud humana, salud y nutrición animal y el cuidado personal, y estamos comprometidos a seguir científica los avances en estos campos para las generaciones venideras”.


US Congressman Pallone Honors 100th Anniversary of Vitamins
Natural Food Insider, 26 September 2012

Rep. Frank Pallone (D-NJ) honored the 100th anniversary of the vitamin last week in the U.S. House of Representatives’ Congressional Record. The American Herbal Products Association (AHPA), the Council for Responsible Nutrition (CRN), the Natural Products Association (NPA), and the United Natural Products Alliance (UNPA), joined Congressman Pallone in his support of the milestone.

Polish-American scientist Casimir Funk first used the term “vitamin” in 1912, describing bioactive substances crucial for human wellbeing. Rep. Pallone, co-chair of the Dietary Supplement Caucus, referenced Funk in his official statement. “Because of [Casimir Funk’s] work, we know that vitamins are essential for good health through every stage of [the] human life cycle and that our bodies require vitamins to grow, to function, to stay healthy and to prevent the onset of disease,” Pallone said.

Micronutrients: The smartest investment the world can make
Globalpost.com, 8 June 2012

Dr. Klaus Kraemer is Director of Sight and Life, a humanitarian initiative of DSM, committed to fighting hidden hunger—malnutrition caused by micronutrient (vitamin and mineral) deficiencies. Dr. Kraemer has over 25 years of experience in research and advocacy in the field of health and safety of vitamins, minerals, carotenoids, and nutraceuticals.

What is the single smartest way to allocate our global aid dollars? The most cost-effective investment, proven to best address today's complex challenges? The one intervention that will have the greatest impact on worldwide health and prosperity? After a year-long assessment, the Copenhagen Consensus 2012 Expert Panel—which includes four Nobel Laureates—declared their answer earlier this month: providing micronutrients (vitamins and minerals) to the world's malnourished people.

For global leaders, this presents a tremendous opportunity to take advantage of the research and expertise pointing to the proven impact of nutrition on improving the lives of millions. “Bundled micronutrient interventions,” particularly for children, are at the top of the Copenhagen Consensus list because proper nutrition early in life impacts a child’s ability to grow, to fight disease, to learn in school and to earn more as an adult.

The announcement that vitamins and minerals are the single best global aid investment comes as we celebrate 100 years of vitamins—in 1912 the term “vitamin” was coined to describe the bioactive substances we now know are absolutely essential for health and development.

Micronutrients have played a vital role in protecting our health for the last 100 years, and they are key to solving our global nutritional challenges. We know that malnutrition leads to irreversible physical and cognitive damage. But we also know that mothers who are well nourished will give birth to healthier babies. And children who receive the best nutrition during their first two years will reach their full cognitive potential, complete more school and grow to become healthier, more productive adults, contributing to a more prosperous future for their families and their nations.

More from GlobalPost: Health, nutrition become priorities at Davos

At Sight and Life we are proud to be a part of the broad base of global momentum building around nutrition. We know that combating malnutrition is a grand challenge, with far-reaching impacts, and will not be overcome by one group alone. We support global partnerships such as the Scaling Up Nutrition (SUN) Movement, working to champion nutrition at global and national levels. And we are committed to growing the evidence base for nutrition in order to provide crucial information for global leaders as they work to transform research—like the Copenhagen Consensus—into action.

The fact is, combating malnutrition is at the top of the list because its impact can be felt across sectors—from health to agriculture to the economy. Improving nutrition is the most effective way to secure a better future. We must support global leaders who have committed to investing in nutrition. We must support developing countries to improve their capacity to scale up nutrition programs and policies. And we must work together so that everyone, everywhere has access to the right foods and the vitamins and minerals they need to grow healthily, nourish their families and support a prosperous future for their nations and the world.

Dietary surveys indicate vitamin intakes below recommendations are common in representative Western countries
British Journal of Nutrition, 13 June 2012

Abstract

Vitamins play a crucial role in health, but modern lifestyles may lead to suboptimal intakes even in affluent countries. The aim of the present study is to review vitamin intakes in Germany, the UK, The Netherlands and the USA and to compare them with respective national recommendations.

Data on adults from the most recently published national dietary intake surveys for the first three countries and data for adults from the US National Health and Nutrition Examination Survey from 2003 to 2008 for the USA were used as a basis for the analysis. The proportions of the populations with intakes below recommendations were categorised as <5, 5-25, >25-50, >50-75 and >75 % for each vitamin.

The data generated are presented in a 'traffic light display', using colours from green to red to indicate degrees of sufficiency. The trends found were compared with the results from the European Nutrition and Health Report 2009, even though in that report, only information on mean intakes in the different countries was available. We showed that, although inter-country differences exist, intakes of several vitamins are below recommendations in a significant part of the population in all these countries.

The most critical vitamin appears to be vitamin D and the least critical niacin. The variation between the countries is most probably due to differences in recommendations, levels of fortification and local dietary habits. We show that a gap exists between vitamin intakes and requirements for a significant proportion of the population, even though diverse foods are available. Ways to correct this gap need to be investigated.

Study highlights low dietary vitamin intakes
Food and Beverage Reporter, 31 August 2012

A new assessment published in the British Journal of Nutrition suggests that 75% of the population in Germany, the UK and the US, does not meet the dietary intake recommendations of the respective countries for a number of essential micronutrients.

Based on large-scale population-based national dietary intake surveys, scientists at DSM evaluated data using a traffic light system to measure actual intakes against national recommendations in the UK, Germany, The Netherlands and the US.

Scientists assigned a red light where more than 75% of the population has an intake status lower than the nationally recommended level. This was the case with vitamin D intake in Germany, the UK and the US; vitamin E in the UK and US; vitamin B9 (folate) in Germany; and vitamin A in the US.

Of the countries monitored, The Netherlands fared best, with fewer red lights than Germany, the UK and the US. The scientists say that the variation between countries is most likely due to differences in recommendations; levels of fortification; and changing lifestyles as well as local dietary habits which have shifted towards fast or convenience foods with a lower density of vitamins and minerals.

Commenting on this traffic light display, Dr Manfred Eggersdorfer, DSM senior vice-president for Nutrition and Science Advocacy, said: “Vitamins play a vital role in the diet, delivering long term benefits to health, and yet this research highlights that 100 years after their discovery there are still major gaps that urgently need closing—to improve people’s long term health and to drive down healthcare costs.”

“We know inadequate intake of vitamins has an effect on long term health, especially in terms of nutrition-related diseases, such as osteoporosis, cardiovascular disease and diabetes. Sufficient intake will support lowering the risk of these non-communicable diseases and aid healthy ageing.”

Differences between the sexes go much deeper than how a woman or man does laundry, socializes with friends or chooses a movie. They go as deep as the vitamins working in their bodies to keep tissues healthy and strong.

All bodies need the right mix of the 13 essential vitamins, but some are more important than others when it comes to the sexes. Dietitian and author of Eat Your Way to Sexy Elizabeth Somer has tips on what vitamins we need most and why.

SheKnows: What vitamins do women need that aren’t so important for men?

Elizabeth Somer: All vitamins are essential, meaning our bodies can’t make them, so they must be obtained from the diet. That said, some vitamins are of particular importance for women -- for example, folic acid, the B vitamin essential to prevent birth defects like spina bifida. Women need at least 400 mcg a day, but often don’t get enough. By the time the pregnancy test comes back positive and they ponder taking a supplement, it could be too late. Since one in two pregnancies are unplanned, according to the March of Dimes, it is essential that all women who are sexually active take a multi that contains folic acid. How much liver do you eat?

SheKnows: Is folic acid difficult to get from food sources?

Elizabeth Somer: Folate in food is not as well absorbed as folic acid in supplements. Also, the main dietary sources
of folate are dark green leafy vegetables, legumes and liver. Since most women do not get at least two servings of dark greens a day, seldom eat legumes and almost never eat liver, it is common for many women to be low in this vitamin.

SheKnows: On the other side, what vitamins do men need that aren’t of as much concern to women?

Elizabeth Somer: Almost everyone is lacking in colorful fruits and vegetables, but men do worse than women, which means their diets are often low in vitamins C, E, A and K. A whole-food diet and supplements for your body’s best health.

SheKnows: Are supplements necessary for women?

Elizabeth Somer: Anyone worth their weight in nutrition credentials will tell you to go to food first. However, the reality is that 99 out of 100 Americans don’t meet even minimum standards of a balanced diet, FDA data says, let alone optimal. Everyone would benefit from a moderate-dose multi-vitamin and -mineral supplement to fill in the gaps on days when you don’t eat perfectly.

Vitamin D is needed in extra amounts often not obtained from diet plus a multi alone. After that, some people at certain ages may benefit from extra amounts of certain vitamins. For example, people don’t absorb vitamin B12 as well as they age or if they are on acid-blocking medications, so this vitamin may be needed in extra amounts for those people.

SheKnows: Why all the press about D, the sunshine vitamin, for health, mood and energy?

Elizabeth Somer: Vitamin E was all over the research and press a few years ago because of its antioxidant capabilities, now vitamin D is coming into the limelight. That’s because for years we thought vitamin D was only important for bone development and maintenance. Once researchers recognized that every cell in the body has receptor sites for vitamin D, it became clear this vitamin was important for much more. I’ve not heard about “energy” but there is an accumulation of research showing links with vitamin D, mood, seasonal affective disorder, multiple sclerosis, certain cancers and muscle strength.

SheKnows: Is our growing consumption of processed foods one of the problems in the fight to nourish our bodies properly?

Elizabeth Somer: Yes! Our bodies evolved over millions of years designed to eat real food that could be hunted or gathered. Those foods are rich in vitamins, minerals, phytonutrients, fiber, protein and other essential nutrients. Man has never bettered Mother Nature. The more processed a food, the lower its content of vitamins, minerals, phytonutrients and fiber, and the higher its calories, fat, sugar and/or salt. The fix? Eat “real” unprocessed foods at least 75 percent of the time ... and supplement responsibly.

http://www.sheknows.com/health-and-wellness/articles/970017/vitamins-and-nutrients-women-need-most
De International Osteoporosis Foundation (IOF) heeft een online kaart gelanceerd waarop staat hoe het met de vitamine D-status is gesteld in bepaalde landen. De kaart werd mede mogelijk gemaakt door DSM, leverancier van onder andere vitamine D.

De kleuren op de kaart geven aan of de vitamine D-status optimaal, sub-optimaal of ontoereikend is of dat er sprake is van een vitamine D-tekort. Voor de samenstelling van de kaart zijn 200 onderzoeken uit 46 landen gebruikt, die zijn gepubliceerd tussen 1990 en 2011. De IOF wil met de kaart een hulpmiddel bieden aan zorgprofessionals die te maken hebben met het bestrijden van vitamine D-tekorten.

Vitamine D-status

Professor Bess Dawson-Hughes, algemeen secretaris van de IOF, zegt: ‘De kaart geeft informatie over vitamine D-tekorten in veel gebieden van de wereld en over verschillende bevolkingsgroepen. Het aantal ouderen groeit over de hele wereld. Vitamine D-tekorten kosten de gezondheidszorg van landen wereldwijd veel geld. Het is dus belangrijk om iedereen wakker te schudden en duidelijk te maken hoe belangrijk een optimale vitamine D-status is.’

http://www.voedingnu.nl/internationale-osteoporose-stichting-lanceert.173895.lynkx
Vitamin D macht Knochen im Alter stabil
DIE BILD, 13 July 2012


UU vitamin research combats stroke risk
BBC News, 11 May 2012

Vitamin B2, which is found in dairy products, can help lower high blood pressure, according to research by the University of Ulster.

UU nutrition experts said one in ten people, depending on their genes, could significantly lower their blood pressure by increased use of the B2.

High blood pressure is the leading cause of stroke and heart disease. Together, they are responsible for about one-third of all deaths in Northern Ireland. The UU said B2, also known as riboflavin, reduced high blood pressure which is often linked to a particular genetic factor found in 10% of the population.

The research was conducted by Dr Carol Wilson in conjunction with staff at Antrim and Altnagelvin Hospitals and Trinity College Dublin. Dr Wilson said: “These findings are so exciting because they focus on novel non-drug treatment for high blood pressure, targeted at individuals with a particular genetic factor.

“The blood pressure-lowering response described in this research paper is hugely relevant in terms of its clinical implications.”

In Western societies, milk and other dairy products account for more than 50% of riboflavin intake, along with some fortified products such as breakfast cereals and other foods.

“In the genetically at-risk group, vitamin B2 was able to lower blood pressure to within recommended target values while having no adverse effects on individuals who didn’t have the gene,” Dr Wilson said.

“The response occurred irrespective of any blood pressure-lowering drugs being taken by the study participants. The extent of blood pressure reduction translates into a 30% predicted reduction in the risk of stroke death in the at-risk group.”

“It would take about 10 kilos of weight loss to achieve the blood pressure lowering that was reported in our findings.”

http://www.bbc.co.uk/news/uk-northern-ireland-18025721
Forgotten vitamin would help cut premature births ‘by 30%’
Food Manufacture, 17 October 2012

The number of premature babies born in the UK could be reduced by as much as 30% if expectant mothers had adequate intakes of vitamin E. This is a particular issue in the UK, where 54,000 babies are born prematurely each year in England alone.

Dr Manfred Eggersdorfer, vice president of Switzerland-based DSM Nutrition, last night (Tuesday, October 16) told a vitamins seminar that greater education, fortification of products and supplements for specific at risk groups was essential to tackle inadequate vitamin E levels.

He told the event, held at King’s College London: “This would have a substantial impact in making pregnancy safer, with studies showing a significant reduction of pre-term births in those groups who had adequate vitamin E levels.”

The figure of a 30% reduction was cited from research published in the Journal of Maternal and Neonatal Medicine.

Asthma in children

Low maternal intake of vitamin E, zinc and vitamin D during pregnancy have also been associated with an increase in recurrent wheeze and asthma in children up to five years of age. In the UK alone, 5.4M people are currently receiving treatment for asthma, including 1.1M children. The NHS spends about £1bn a year treating and caring for people with asthma.

Eggersdorfer’s talk, ‘100 Years of Vitamins’, reflected on the findings of a YouGov survey into vitamin E released yesterday which uncovered a widespread lack of knowledge from the 2,000 people surveyed. Just 13% of women were aware that Vitamin E is an anti-oxidant. Furthermore, only 1% of women were aware of all the primary benefits of vitamin E.

Eggersdorfer said it was known to improve skin condition and protect cells in the body from disease damage, as well as its benefits for pregnant mothers.

EFSA claim

“It also reduces blood clots and aids blood flow, as well as having an European Food Safety Authority (EFSA) claim as an antioxidant function in place,” he added.
“It is vital we make people aware of the role of vitamin E and adequately communicate its benefits.”
Speaking in the context of wider vitamin consumption, Eggersdorfer said “single high doses” of individual vitamins was the wrong approach. He added any supplements should be consumed as part of a wider, healthy and balanced diet.

Some of the most important sources of vitamin E are vegetable oils, nuts, whole grains and wheat germ. Other sources include seeds and green leafy vegetables. The vitamin E content of vegetables, fruits, dairy products and fish and meat is relatively low.
Eggersdorfer said fortification of products with vitamin E was a possible solution, with some European countries adding it to milk.

Speaking after the event, Professor Tom Sanders, head of the college’s diabetes and nutrition division, said evidence suggested vitamin E consumption had increased in the UK in the “past 10–20 years”, citing increasing levels of vegetable oils in products like baked crisps, and urged caution before recommending dietary supplements for pregnant women.

energy, or renewables like sun or wind most efficiently. Everything we do must be as efficient as possible, maximizing the beneficial impact of every type of resource, and in parallel we have to make a fundamental shift from finite and rapidly depleting reserves to renewable resources.

Feeding the planet has to be at the top of the priority list; so we need, for example, to design foods where both the caloric and the nutritional content is optimized and the bio-availability of nutrients is as high as possible. In other words, we take as much of the vitamins, micro-nutrients and other ingredients as we can from every mouthful we eat. The same kind of zeal for efficiency has to apply to energy, use of raw materials or water, and so on. Agriculture will once again become the central activity for the production of food, energy and materials. We need an agricultural revolution if we are to ensure enough sustainable biomass is available and we must maximize the true potential of plant matter. Thankfully, this process is already underway.

We are pioneering the development of advanced biofuels which allow us to generate truly renewable energy from the non-edible parts of plants and agricultural residues, including the stalks, blank cobs, and leaves from corn. In addition to the sustainability benefits, this development, and the emerging bio based economy more broadly, will create jobs and transform rural economies.

We must reduce waste to a minimum. In fact, we need to get to the point where there is no such thing as waste. Again, this means bio-refineries must use every single element of biomass - from starch and sugar to cellulose to lignin - in the most intelligent and sustainable ways possible to simultaneously meet our need for energy, materials, and food. The days of wasting food and casually burning our most precious resource must come to an end. Being flexible and very strategic in terms of how we manage our resources will become even more important. This means, for example, that although the era of abundant and cheap fossil resources is over, in certain situations it will still make most sense from a resource efficiency perspective to generate energy and manufacture using fossil fuels and traditional chemical routes. The emerging bio- economy will not, and should not, be a simple like-for-like replacement for the fossil based economy.

This transformation will require an awful lot of innovation and an awful lot of science. Luckily, this we have. The capabilities in industry, but even more so among the partners in academia around the world with whom we cooperate is significant. Virtually every fossil-derived product could be manufactured from biomass, and we are certain we can meet these challenges by working closely together on this one big goal. Finally, business has an absolutely vital role to play in this transformation. To do so individual companies need to recognise that sustainability is not a ‘nice to have’ but a ‘need to have’, and their growth prospects will be determined by their capacity to fully integrate sustainability into all of their activities.

Now, all this makes the challenge sound very easy. It is not. The changes required are monumental, and change is never easy. We firmly believe that we can successfully address these challenges. But to do so, resource use has to be absolutely central to our approach, and we have to work towards a shared vision of what a genuinely sustainable world of 9 billion will look like.

http://www.huffingtonpost.co.uk/stephan-b-tanda/what-should-a-world-of-9-_b_1966025.html
"Here's to the next #100yearsofvitamins, brighter science, brighter living and improved #nutrition. - @wfpertharin @WFP #UNGA @DSM"
Join us on the journey of the next 100 years of vitamins