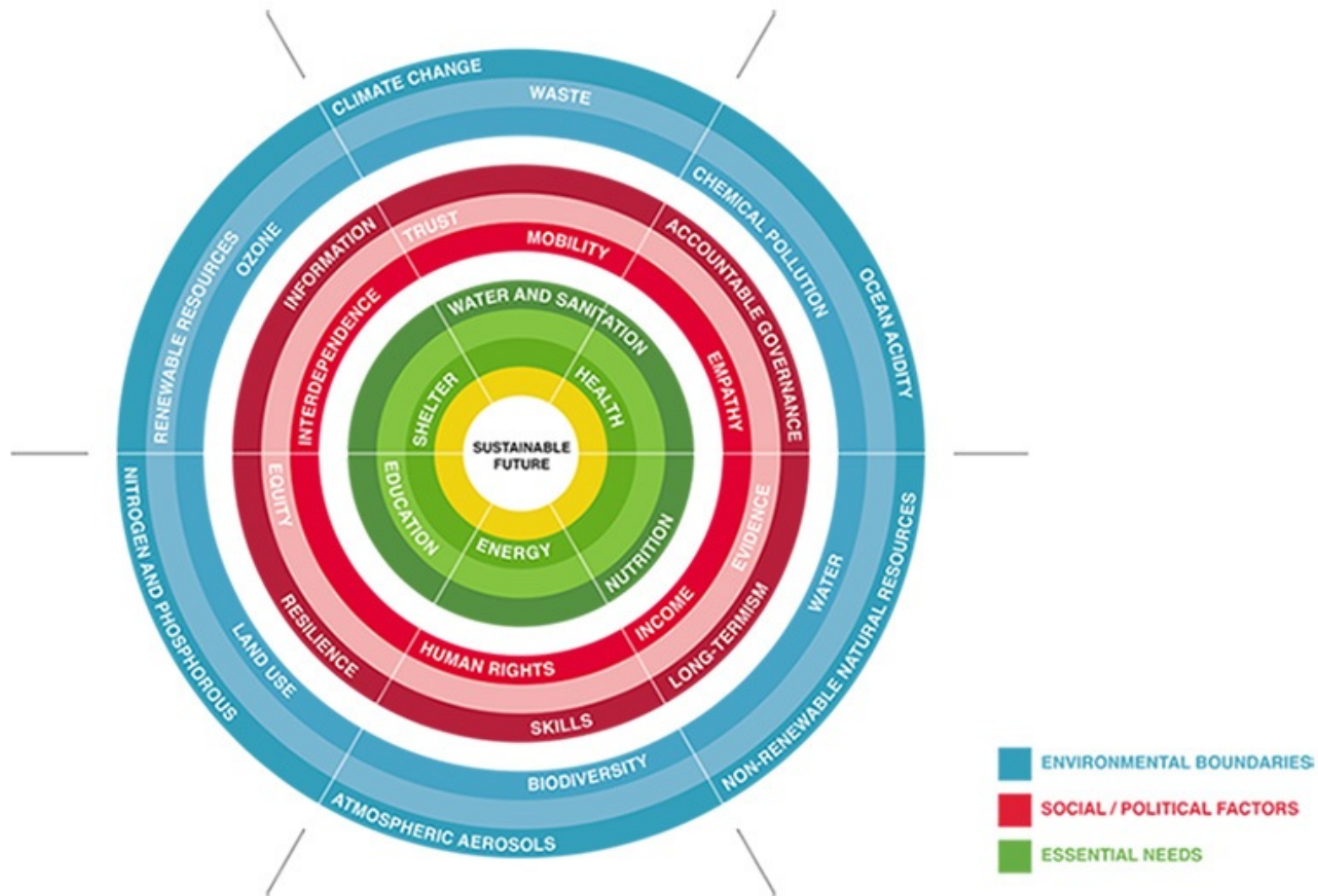
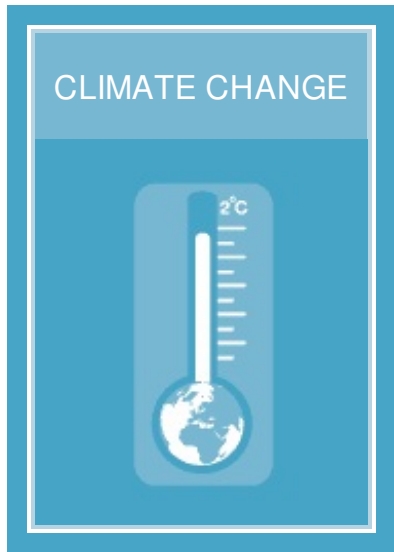


# HORIZONS

think future





The average global temperature must not rise more than 2°C above pre-industrial levels.

### What is Climate change?

Greenhouse gases, such as carbon dioxide and methane, are being produced by human activity faster than natural processes can remove them, and are accumulating in the atmosphere. As a result, the mean global temperature is rising.

### Why is this critical?

Climate change is expected to lead to a range of effects such as increased frequency of extreme weather events, changes to regional precipitation patterns, a decrease in snow cover and sea ice extent, and sea level rise. These impacts, alongside the inevitable societal response (from regulation and innovation through to investor pressure and activism), will fundamentally transform the competitive context within which all organisations operate.

Through the UN Framework Convention on Climate Change (UNFCCC) process, there is broad political agreement on the need to stay below a 2°C rise to avoid 'dangerous climate change.' Beyond 2°C, the potential impacts of global warming become highly unpredictable – and bring the risk of tipping the Earth's climate system into a new, irreversible pattern. This would seriously disrupt nearly all ecosystems on the planet and potentially collapse many important regional ecosystem services on which all societies and economies depend, such as water catchments and soil renewal. This would create food and water stress, massively increase biodiversity loss, and increase ocean acidification.

Not going over the 2°C rise requires the rapid decarbonisation of the global economy. Global carbon dioxide emissions have to fall by some 6-9% a year between now and 2050 to give us a reasonable chance of staying under this threshold.

## Implications

**SHOULD** Ensure that products and services are best-in-class, and fit-for-purpose, in a carbon-constrained world.

**SHOULD** Play a role in adapting natural and human systems to the inevitable impacts of climate change

**SHOULD** Be a vocal and effective advocate for broad societal action on climate change.

**MUST** Demonstrate an understanding of – and develop strategies to tackle – the full range of risks and opportunities posed by climate change.

**MUST** Reduce greenhouse gas emissions in line with global reductions of 6 – 9% year on year.

## NUDGES

- 1 What would your organisation look like in a world with a carbon price of £30 a tonne or £70 a tonne?
- 2 How will increasing extreme weather and/or sea level affect your supply chains and/or customers?
- 3 Is environmental change mitigation or adaptation a business opportunity for you?
- 4 How do your carbon emissions affect your bottom line?
- 5 How is the need to reduce global emissions driving change in your market(s)?

## MOBILITY



Ensure that everyone has the ability to access goods, education, services, people and work.

### What is Mobility ?

The ability to meet society's need for people to be able to move around and maintain social and economic connections. This includes physical movement, but also other solutions such as ICT-based platforms and virtual mobility.

### Why is this critical?

Mobility is a key enabler to participate in society and the economy. It shapes the way in which we build our communities, where we work and spend our leisure time. People's mobility, particularly in developed countries, has increased drastically and we are travelling further than ever before. A number of factors are driving this trend, such as decreasing cost of travel in many places and urban sprawl. There are already one billion cars on the road, and this is expected to grow to two billion in the next 10 years. This has significant consequences, with transport emissions accounting for 26% of CO<sub>2</sub> emissions globally. In addition, urban air pollution causes 800,000 premature deaths each year, and the increasing time we spend travelling can dislocate people from communities. The Eddington Transport Study (2006) outlined the way transport enabled economic prosperity through improved business efficiency, stimulating business investment and innovation, and attracting trade for example. However, the study also forecast that congestion could cost the UK economy alone £22 billion per annum by 2025.

### Implications

**MUST** Balance the mobility needs of business and society with the planet's ability to support them.

**MUST** Prioritise mobility systems that are low carbon, safe, affordable, efficient and promote healthy lifestyles. These must be absolute improvements.

**SHOULD** Reflect the full environmental and social costs in mobility pricing.

**SHOULD** Explore different business models to fulfil needs for access.

## NUDGES

- 1 How do you currently move your workforce, goods and services around?
- 2 How can you do this in a way that is low carbon, safe and affordable?
- 3 How do your customers access your products/services? How will this change?
- 4 How can your organisation benefit from a more mobile society?

## INFORMATION



# There must be universal access to information.

## What is Information?

Information is knowledge that can be acquired in any manner.

## Why is this critical?

Affordable access to information increases understanding and consequently guides behaviour and decision-making. The ongoing digital revolution will drive increased access to information. Open source data is leading to new business models and product innovation, for example transport platforms that enable personalised travel plans based on live data like myPTP. Information technology (IT) enables the media to contribute more to transparent, accountable politics by opening public debates and exposing corruption and abuse. The rise of social media platforms such as blogs and social networking have led to more individuals being involved in calling key institutions to account across the world.

Access to IT is closely linked to a country's level of economic development, for example, access to broadband is an important foundation for future growth in employment and productivity. Research by Vodafone suggests that, in a typical developing country, an increase of 10 mobile phones per 100 people boosts GDP growth by 6%.

## Implications

**MUST** Support affordable and open flow of information and knowledge between people, business and communities.

**SHOULD** Enable others to provide universal access to information

**COULD** Develop platforms for open, transparent sharing of information.

## NUDGES

- 1 How can your organisation benefit from sharing data (outwardly and inwardly)?
- 2 How can your customers benefit from increased/improved information from you?
- 3 How is social media affecting your organisation and its markets?
- 4 How can you benefit from sharing information with your supply chain and partners?





## Everyone must have access to accountable, transparent and participatory governance systems.

### What is Accountable Governance ?

Accountable governance refers to systems, checks and balances that require individuals and organisations to account for, explain or justify their actions, both voluntary and legal.

### Why is this critical?

Accountable governance refers to systems, checks and balances that require individuals and organisations to account for, explain or justify their actions, both voluntary and legal.

Lack of accountability and transparency is the most important cause of corruption, the cost of which is huge, adding an estimated 10% or more to the costs of doing business in many parts of the world. It also accelerates the depletion of natural resources, which business and society rely on.

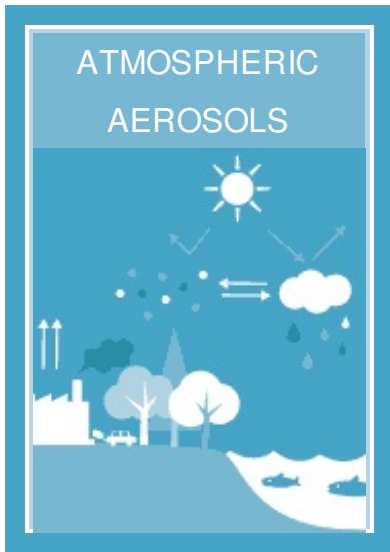
### Implications

**MUST** Be transparent and accountable.

**COULD** Seek to raise standards on visibility and transparency.

## NUDGES

- 1 Are your governance, business and financial models open and transparent?
- 2 What systems do you have in place to account for decisions made?
- 3 Do ethical concerns shape your markets or affect adoption of your technology/products?
- 4 Who benefits and who is affected by your operations? How do you monitor this?



## Atmospheric aerosol loading (amount in the atmosphere) must be limited.

### What is Atmospheric Aerosols?

An aerosol is a system of tiny particles suspended in the air. Aerosols occur naturally (for example from volcanic eruptions), but are also produced by human activity (for example, soot and sulphur from coal-fired power stations).

### Why is this critical?

Human activities since the pre-industrial era have doubled the global concentration of most aerosols (concentration of aerosols is highest in the northern hemisphere where industrial activity is centred). The sources of human-produced aerosols include coal and oil-fired power stations, aircraft contrails and shipping exhaust, biomass burning, as well as burning forest to clear land for farming.

Aerosols have many effects. They are a key component of photochemical smog, and have adverse effects on human health, increasing lung cancers and respiratory diseases – the World Health Organization (WHO) estimates that nearly two million people die prematurely from illness attributable to indoor air pollution from household solid fuel use, while urban outdoor pollution causes 1.3 million deaths per year. This creates a long-term health burden for societies and reduces labour productivity.

Aerosols also influence the climate system, particularly rainfall, and can disturb important weather patterns such as monsoons. Aerosols tend to cause cooling of the Earth's surface immediately below them by reflecting sunlight back into space. Aerosols have also been linked to crop damage from exposure to ozone, as well as forest degradation and loss of freshwater fish due to acidic precipitation. A safe threshold for aerosols is yet to be quantified.

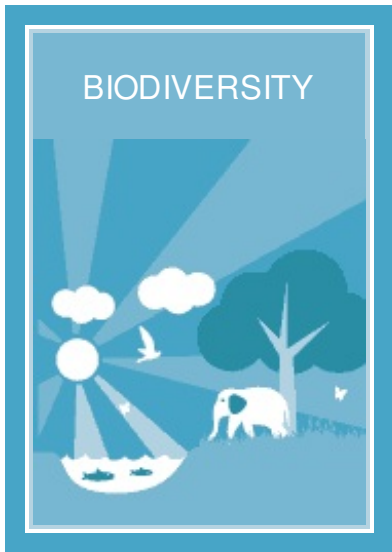
### Implications

**SHOULD** Minimise release or contribution to the release of aerosols as much as possible.

**MUST** Comply with aerosols regulations.

## NUDGES

- 1 Do your activities release atmospheric aerosols and what are they? How can you reduce them?
- 2 How does air quality affect your customers and their needs?
- 3 How do releases of atmospheric aerosols affect your operations? (e.g. travel restrictions or plant shutdowns)



Biodiversity should be maintained, with the species extinction rate no higher than the estimated background rate of 10 species per million per year.

### What is Biodiversity ?

The variability among living organisms within species, between species and between ecosystems.

### Why is this critical?

The biodiversity of the planet provides many critical benefits to humanity. These range from ecosystem services, such as pollination, to contributing to human wellbeing and health. Direct pressure for land, habitat, food and from pollution, climate change and invasive species means that biodiversity declined by 30% between 1970 and 2008. The total annual economic cost of biodiversity loss and ecosystem degradation was estimated to be between US\$2 trillion and US\$4.5 trillion in 2008. The consequences will not just affect companies with direct reliance on natural resources, but will also affect the supply chains and growth objectives of most industry sectors in the developed and developing world. Failure of these services will, at a minimum, increase costs, and potentially threaten entire business models.

There is also an ethical case for preserving and enhancing biodiversity; for its intrinsic value and as part of human beings' role as custodians of the natural environment.

### Implications

**MUST** Demonstrate an understanding of – and develop strategies to tackle – the full range of risks and opportunities regarding direct and indirect reliance on biodiversity.

**MUST** Reduce rate of loss of biodiversity.

**SHOULD** Build biodiversity locally and globally, and encourage broad societal action on biodiversity.

**SHOULD** Contribute to the development of a common global standard for valuing biodiversity and ecosystem services.



## NUDGES

- 1 How do your supply chains or activities rely on ecosystem services (eg bees for pollination) or natural materials (eg crops)?
- 2 How would your organisation be affected by significant changes in biodiversity like habitat loss?
- 3 How can you contribute to improving biodiversity through your operations?
- 4 Do any of your operations contribute to biodiversity loss?

## NITROGEN AND PHOSPHORUS



# Control the amount of atmospheric nitrogen converted into different forms and reduce phosphorus release.

## What is Nitrogen and Phosphorus?

Nitrogen and phosphorus are essential nutrients. The nitrogen cycle describes movement of the element from the air into the biosphere and organic compounds, then back into the atmosphere. When nitrogen is released, it becomes 'reactive nitrogen' ammonia, nitrous oxide, nitrogen oxides (NO<sub>x</sub>) and nitrates. The phosphorus cycle releases the element from rocks by weathering, makes it available to plants in soil, and eventually deposits it in the oceans, where new rocks are formed.

## Why is this critical?

Production of synthetic nitrogen is a key input for agriculture and industry, and a persistent side-effect of combustion for energy and transport. Through the production of fertilisers, growing leguminous crops, burning fossil fuels and biomass, we release about 150 million tonnes of nitrogen each year, the same as the total nitrogen fixed in natural systems. Agriculture uses the greatest amount of nitrogen, with 80% of crops going to support livestock in Europe. This reduces drinking and bathing water quality, causes soil acidification, particle air pollution (which in turn causes respiratory problems and cancers), acidification and eutrophication (presence of excessive nutrients) which leads to severe problems for fisheries and water supplies. The European Nitrogen Assessment (ENA) estimates that the annual cost of nitrogen across Europe is £60-£280 billion (€70-€320 billion).

Presently, 20 million tonnes of phosphorus are mined every year, 80% for fertilisers. It ends up in rivers, lakes and oceans where it causes excessive growth of algae that can kill fish and dramatically reduce the productivity of waters. It is a critical non-renewable resource that has no substitute in food production. The US has approximately 25 years of reserves remaining, while China recently imposed a 135% export tariff to secure domestic fertiliser supply. Western Europe and India are dependent on imports. Global peak phosphorus production is expected to occur around 2034, although this is now contested as some major reserves have not been taken into account.

## Implications

**MUST** Not lead to nitrogen or phosphorus pollution.

**MUST** Use nitrogen and phosphorus more efficiently, especially in agriculture.

**SHOULD** Recycle nitrogen and phosphorus from waste water systems.





## NUDGES

- 1 What effect does your organisation have on nitrogen and phosphorus pollution?
- 2 How could you use input of Nitrogen and Phosphorus more efficiently?
- 3 How would your organisation be affected by a shortage and/or significant increase in cost of phosphate?



## The ozone layer must be protected and encouraged to recover.

### What is Ozone ?

Ozone (O<sub>3</sub>) is a gas occurring naturally in small amounts in the stratosphere. The ozone layer absorbs ultraviolet radiation from the sun and so protects life on Earth from the harmful effects of that radiation.

### Why is this critical?

Ozone-depleting substances (ODS) are man-made gases that damage the ozone layer in the upper atmosphere. This causes an increase in ultraviolet radiation reaching the ground and leads to more cases of skin cancer, cataracts and other health problems. Halons, hydrochlorofluorocarbons (HCFCs), chlorofluorocarbons (CFCs) some solvents and methyl bromide (used as a pesticide) are all types of ODS. Common uses for ODS include refrigeration and air conditioning equipment, aerosols, foam-blowing agents, fire-fighting fluids and high-voltage switchgear.

Most ODS are being phased out, but they can be found in older equipment. There are also a few exceptions for certain uses. If you manufacture, supply, use, install or service equipment containing ODS, you must comply with strict legislation.

### Implications

**MUST** Not deplete stratospheric ozone by using any ozone-depleting substances.

## NUDGES

- 1 How could you ensure that you do not use or generate ozone depleting substances?
- 2 How does movement away from ozone depleting substances change your market?



Release of contaminants must be controlled in such a way as to eliminate any damage to natural systems and human health.

### What is Pollution?

When contaminants (chemical, energy, noise, heat or light) resulting from human activities enter the environment and contaminate air, water or soil, or tissues of plants and animals. These include run-off from industry or agriculture, or air pollution from vehicles and industry. Some chemicals are persistent pollutants with global distribution, for example mercury, certain plastics and Persistent Organic Pollutants (POPs), such as PBDEs (chemical compounds used as flame retardants), dioxins and DDT.

### Why is this critical?

Pollution damages the environment and can threaten human health. It can be slow-acting but cumulative. In particular, toxic chemicals can be found in common products such as certain cleaning products. Persistent pollutants are not quickly broken down by natural processes into harmless materials. They accumulate in human and animal tissue and can be amplified as they pass up the food chain. It has a variety of effects, from direct toxic effects on humans (such as increased risk of cancers and birth defects), to damaging whole ecosystems.

As a result of the concerns of society, many hazardous materials have been banned or restricted in some countries, and others are under threat of being banned. A business using hazardous chemicals will face additional costs to protect workers and the environment during manufacture, to clean up waste streams, and to manage the risks of release during the use and disposal phases of the life cycle. Many major brands are making commitments to eliminate all releases of hazardous chemicals from their supply chain and products, including Marks and Spencer, Levi's and Nike.

### Implications

**MUST** Not increase the burden of persistent pollutants on the environment.

**SHOULD** Reduce overall burden of pollution by substitution with less or non-hazardous alternatives if identified.

**COULD** Help remove chemical pollution from the environment.

**MUST** Adhere to REACH (Registration, Evaluation, Authorisation and restriction of Chemicals) and the Basel and Rotterdam and Stockholm conventions on toxic waste, hazardous chemicals and persistent organic pollutants.



## NUDGES

- 1 Are any of your raw materials restricted under REACH legislation?
- 2 Could you substitute any raw materials in your supply chain with less harmful or less polluting materials?
- 3 How would your organisation be affected by a pollution incident within your supply chain and/or production?
- 4 How can you create value from your waste streams?
- 5 How do you ensure your operations don't generate or release hazardous materials into the environment?



## Land-use must be managed sustainably to meet both human and broader ecosystem needs.

### What is Land Use?

The main activity taking place on an area of land such as agriculture, forestry, cities and forestry.

### Why is this critical?

As the global population rises (from seven billion in 2011 to over nine billion in 2050), there will be huge pressure on land for food, energy and housing. The availability, condition, spatial distribution and intensity of land use is critically important for the production of: food, regulation of freshwater flows, maintaining biodiversity and important habitats such as peatland and other ecosystems services - such as soil renewal, pollination and primary productivity (the production of organic compounds from atmospheric or aquatic carbon dioxide, eg through photosynthesis). Almost all life on Earth relies directly or indirectly on primary production.

Currently 12% of the world's ice-free land is used for crops. Johan Rockstrom of The Stockholm Resilience Centre advocates that no more than 15% of ice-free land globally should be converted to cropland to maintain capacity for the provision of ecosystem services. Pressure for more cropland will increase as the UN anticipates the need for a 70% increase in food production to meet demand.

Conversion of land from non-human to human use can trigger a multitude of effects such as releasing CO<sub>2</sub> and methane. It can contribute to biodiversity loss through habitat destruction and has been identified as one of the causes of recent food price volatility. These changes can then potentially disrupt supply chains.

### Implications

**MUST** Avoid excessive use of land and not further deteriorate land condition.

**SHOULD** Reserve most productive land for agricultural uses and maintain high conservation-value land in current state.

**SHOULD** Radically improve land-use efficiency of human activity.

**SHOULD** Restore land to former or improved condition after it has been damaged or altered.





## NUDGES

- 1 Could your organisation help to improve the health of a land area?
- 2 How do your supply chains affect changes in land use?
- 3 How would your organisation be affected by a campaign that labels your activities as destroying habitats?
- 4 How would your organisation be affected by reduced topsoil availability?



## Levels of trust must be high within society, for people and institutions.

### What is Trust?

The belief that others will not knowingly act in a way that is detrimental to our interests or, better still, will act in a way that benefits our interests.

### Why is this critical?

It is argued that trust is the key to efficient markets and economic growth. Social and economic activity slow down in a low-trust environment – lack of trust was a central factor in the collapse of the financial markets, for example. Trust also affects rates of criminal offending and victimisation, morbidity and mortality, quality of life and the stability and responsiveness of democratic systems in government.

Trust is essential to building enduring connections within communities – with employees, suppliers, customers – and it drives risk-taking that can lead to innovation, for example the rise of peer to peer business like Whipcar (lending your car) and Kiva (lending your money). Trust enables people to interact with confidence, making it easier to do business with each other, and therefore underpins a successful economy. Some economists now believe that levels of trust can explain difference in per capita income of nations; one theory by World Bank economist Steve Knack suggests that trust is worth US\$12.4 trillion a year to the US.

### Implications

**SHOULD** Not undermine levels of trust in society or the basis for trust, such as social networks.

**COULD** Build trust, for example through actively engaging stakeholders and ensuring transparency.

## NUDGES

- 1 What value does trust have with relation your organisation and/or brand?
- 2 How do you seek to build trust inside and outside your organisation?
- 3 What organisations could you partner with to help build trust with key stakeholders?
- 4 How will levels of trust affect the adoption and scalability of your technology or product?



Societies must have broad-based respect for human rights: people should have freedom to exercise choice and participate in decision-making that affects their lives.

### What is Human Rights?

Human rights are rights inherent to all human beings, regardless of nationality, place of residence, sex, ethnic origin, colour, religion, language or any other status. We are all equally entitled to our human rights without discrimination.

### Why is this critical?

The recognition that all people are equal and are entitled to basic human rights is essential for quality of human life. The UN Declaration of Human Rights, set out in 1948, declares that everyone is entitled to live within a society that realises these basic human rights. This lays the foundation for enabling participation from all, regardless of background, gender or religion in political, social and economic activity. It also requires us to respect the rights of future generations and their need for access to resources. Globalisation presents new and complex challenges for human rights. Companies have significant power and influence over people, especially those that operate across countries. Business can be scrutinised easily and can be at risk not only from costly litigation, but from their reputation – which can severely damage a business. Equally, sound business practice and ethical practices can open up new markets.

### Implications

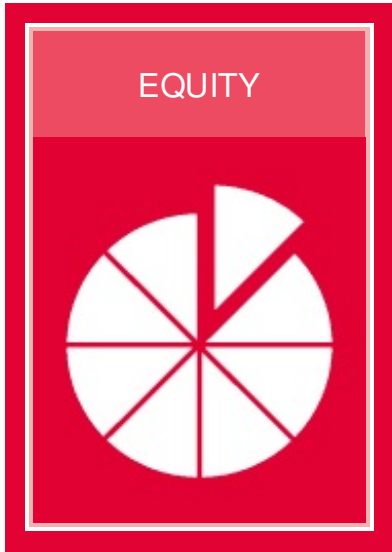
**MUST** Not violate human rights, and at a minimum adhere to legal standards.

**SHOULD** Promote and respect human rights across all operations.

**COULD** Raise standards to ensure that no individual or group's rights are marginalised.

## NUDGES

- 1 How could your organisation contribute towards human rights?
- 2 How do you ensure there are no human rights violations in your supply chain?
- 3 Who could you partner with to promote human rights?



## Enable fair and equal access to resources and opportunities.

### What is Equity?

To be equitable is to be fair and reasonable.

### Why is this critical?

Treating people with fairness, as equals, gives individuals an opportunity to make the most of their lives, regardless of their background or position in life. Legislation exists in many countries to protect individuals from discrimination on the grounds of age, gender, disability, pregnancy, religion etc. Inequality is also detrimental for society as a whole, and for the economy. The principal aim of economic development is to promote the welfare of the population. A fair distribution of resources, both globally and nationally, is essential to achieve this. Inequality and inequities are increasing globally and the Millennium Development Goals (MDGs) seek to address some of them. There is a huge disparity in the ecological footprint per capita between high and low-income countries. Unequal distribution of resources can lead to overexploitation of some resources and irresponsible management of others. This has a direct impact on the ability of people to meet their needs and to live well. Unfair access to resources damages global markets for goods and services, and can ultimately lead to political and social instability.

### Implications

**MUST** Seek to enable fair and equal access to resources and opportunities.

**SHOULD** Take responsibility for using and managing resources fairly, both for this generation and future generations.

**SHOULD** Think about how to distribute goods and services across society.

**SHOULD** Direct targeted action and necessities to those who need it most.

## NUDGES

- 1 Do you use resources responsibly and fairly?
- 2 How can you ensure that your work helps benefit those who are most in need?
- 3 How will a growing global middle class in developing economies change your markets and supply chains?
- 4 How can you develop affordable solutions for the huge market of world's poorest?



## LONG-TERMISM



All key decisions must actively take into account the wellbeing of current and future generations.

### What is Long-termism?

Long-termism is the principle that decisions, investments or services, should be made for long-term value rather than just short-term returns.

### Why is this critical?

Short-termism in business and the pressure for quick returns, both in capital markets and the consumption of products and services, is a major factor in creating unsustainable development. Extreme focus on the short term has been linked with unethical behaviour that can threaten the survival of a company, illustrated by the collapse of Enron in 2001. It can undermine strategy by ignoring long-term or unexpected risks and opportunities. It fails to account for the impacts of economic activity on ecosystems and communities, and can lead to unintended and irreversible damage to both. Focusing on short-term economic value can undermine long-term economic value and a company's ability to flourish and survive in the future. Companies are demonstrating the value of taking a longer term view. For example, Unilever is shifting to a business model designed to be successful in the long-term. Their Sustainable Living Plan is at the heart of their ambition to double turnover and their stock has topped more than one Index since the unveiling of their plan.

### Implications

**MUST** Take into consideration long-term impacts and invest in action that will create long-term value.

**SHOULD** Fulfil a duty to future generations.

## NUDGES

- 1 Will your business plan be relevant to your market in 10 year's time?
- 2 How would your organisation change if it worked on 10 year strategies?
- 3 What is your organisation doing now that it won't be able to do in 10 years time?
- 4 How do short-term decisions your organisation make affect technology development and innovation?



## Most industrial and domestic waste should be eliminated.

### What is Waste?

Any substance or object that the owner discards, intends to discard or is required to discard.

### Why is this critical?

Excessive or poorly managed waste leads to environmental damage and the depletion of natural resources. Just over half of UK waste is disposed of in landfill, and it is estimated the EU throws away three billion tonnes of waste each year, of which around 90 million tonnes are hazardous. Biodegradable waste in landfill produces methane, a greenhouse gas 20 times more potent than carbon dioxide. Of the 600 million tonnes of material used each year in the UK economy, only 115 million tonnes are recycled. Yet waste can be a valuable resource either for reusing, or putting to other uses, such as generating energy from food waste. The more waste created, the greater the cost to business of dealing with waste, because disposal costs rise over time and the cost of resources also rises as they become more scarce.

### Implications

**MUST** Follow the reduce, reuse and recycle hierarchy.

**SHOULD** Explore using waste as a resource.

**COULD** Apply closed loop processes (where waste or by-product is used to make another product).

## NUDGES

- 1 Do any of your waste streams offer value as a raw material for other organisations?
- 2 What would your organisation look like under a leasing or 'closed-loop' model?
- 3 How do you actively design out waste generation from the start?
- 4 How can help your customers reduce their waste?
- 5 What would landfill bans on certain product categories or materials mean for your organisation?



## Stocks of renewable resources must be managed sustainably to meet both human and broader ecosystem needs.

### What is Renewable Resources?

A natural resource is renewable if it is regenerated by natural processes within a reasonable timeframe, for example timber, biomass (biological material eg plants that can be converted into energy), water, solar power, soil and wind energy.

### Why is this critical?

Overuse of renewable resources through direct exploitation or habitat damage can impair the ability of some resources to replenish themselves and, in some cases, lead to extinction. For example, three quarters of the world's fish stocks are fully fished or fished beyond their sustainable limits: soil health is vital to agriculture productivity and the economic cost of soil erosion in Europe is estimated around £46 per hectare. Overexploitation can also damage the ability of ecosystems to mitigate other environmental dangers, such as climate change.

Renewable resources are only available for commercial exploitation in the long-term if managed sustainably.

### Implications

**MUST** Not exploit stocks of renewable resources beyond their recovery point.

**MUST** Utilise valuable renewable resources, like wind and solar, in place of non-renewable resources where possible.

**SHOULD** Build stocks and flows of renewable resources.

**SHOULD** Improve the material efficiency of the economy eg by developing closed-loop material systems.

## NUDGES

- 1 What environmental and social pressures affect the renewable resources that travel through your supply chains?
- 2 Are there renewable alternatives for the resources you currently rely on?
- 3 How can you contribute to restoring (i.e. generating more than you take) renewable resources?
- 4 How does a drive to generate and store more renewable energy in the future affect your market and operations?
- 5 How will price trends for renewable versus non-renewable energy and materials change your business model over the next 10 years?



The concentration of acid compounds in the world's oceans should be reduced to pre-industrial levels.

### What is Ocean Acidification?

When CO<sub>2</sub> dissolves in seawater, carbonic acid is formed and the ocean becomes more acidic.

### Why is this critical?

Our oceans have become more acidic, rising from 8.2 pH to 8.1 pH since the beginning of the industrial revolution. As the ocean waters become more acidic, calcifying organisms like corals, mussels, algae and plankton are less able to produce carbonate shells and skeletons. Affecting organisms at the bottom of the marine food chain could threaten the entire ocean ecosystem. Millions of people depend on the oceans including fish stocks for food, tourism and livelihoods. It may also reduce the ability of the ocean to absorb CO<sub>2</sub> and contribute to coral reef erosion.

### Implications

**SHOULD** Radically reduce emissions of CO<sub>2</sub>.

**SHOULD** Help ecosystems and human systems adapt to ocean acidification.

## NUDGES

- 1 How are your supply chains or customers reliant on marine ecosystems?
- 2 How can you reduce emissions of CO<sub>2</sub>?





Global consumption of fresh water must not exceed 4,000 cubic km per year. Watersheds at the local level must be managed sustainably.

### What is Fresh Water?

Surface water, eg freshwater streams, rivers or lakes, and ground water, such as aquifers.

### Why is this critical?

Water is vital for life, for food production, industrial processes, hygiene etc. Currently the global economy uses about 2,600 cubic km of water per year and this is increasing rapidly. The World Economic Forum predicts that the gap between freshwater demand and supply will be about 40% globally by 2030 if 'business as usual' continues. According to the World Bank, 80 countries currently have water shortages that threaten human health and economic activities, while 70% of the world's freshwater use is for agriculture. Some 800 million people live below UNEP's water stress threshold (when annual water supplies drop below 1,700m<sup>3</sup> per person) and by 2025 this number will rise to three billion. Already, there is competition and local conflict for available clean water.

The costs of recycling polluted water will rise. In Europe, 53% of transported surface water and groundwater is used by industry, 26% for agriculture and 19% for domestic purposes. Many companies rely heavily on water and access to water is critical for their products or services. Water use in agriculture and industry supply chains is often not factored into the cost of production. The production of 1kg of plastic uses about 185 litres of water, a pair of jeans 11,000 litres and a car 400,000 litres. HSBC have called for global action to tackle water shortages and companies like PepsiCo have now made water a strategic priority, and aim to replenish the water it consumes.

### Implications

**MUST** Radically reduce the amount of fresh water used for human activity.

**MUST** Build resilience of water systems and minimise the pollution of aquifers.

**SHOULD** Radically improve efficiency of water use through recycling and reusing whenever possible.

**SHOULD** Measure and minimise water use embedded in products/raw materials.



## NUDGES

- 1 How will water constraints affect your organisation? For example, through your supply chain, production and customer use?
- 2 How can you contribute to a sustainable water supply in the communities and environment your organisation relies on?
- 3 Do you measure the 'water footprint' of your operations? Do you know the potential areas of water stress in your supply chains?
- 4 How do increased incidences of flooding affect your operations and customers?
- 5 How would water constraints affect the scalability of your technology or products?

## NUTRITION



There must be access to adequate nutrition for all.

### What is Nutrition?

On average a person needs about 1,800 kcal per day as part of their minimum energy intake, as well as a wide range of nutrients, from iron to vitamin C, to maintain health.

### Why is this critical?

In 2010, one in seven people were malnourished as a global average. Malnutrition is the underlying cause of 3.5 million deaths among mothers and children in the developing world each year. Yet malnutrition is rarely a function of absolute lack of food; it is rather a problem of access to food supply. Financial crises and food price spikes exacerbate this situation, with the poor less able to afford adequate nutrition.

In contrast, by 2030 the number of overweight and obese adults is projected to reach almost two billion. Obese people are more likely to develop chronic illnesses such as diabetes and cardiovascular diseases, which cause 60% of all deaths worldwide.

### Implications

**MUST** Leverage agricultural practices and product distribution to maximise food security.

**SHOULD** Promote public policies which incentivise proper nutrition.

**SHOULD** Develop products, services and marketing approaches that improve nutritional outcomes.

## NUDGES

- 1 What role does your organisation play in providing nutrition?
- 2 How could you contribute to building levels of nutrition in society?
- 3 How could your organisation provide solutions to prevent poor nutrition in society?
- 4 How does the diet of your customers affect their needs?



Evidence should be valued by society and form a core foundation of sound decision- making.

### What is Evidence?

Something that provides grounds for belief or disbelief.

### Why is this critical?

Having a solid, reliable foundation of evidence that helps us understand the world is vital to making the right decisions and successful policy for the long term. This constitutes careful examination of the evidence base, particularly in controversial areas, and includes scientific evidence as well as experiential evidence. In addition, measuring the right factors is vital because it helps us understand how something works and so how to improve it; 'what is measured is managed' and 'what isn't measured isn't managed.' For example, to reduce the carbon impact of an activity we need to understand how the carbon emissions are generated, the various options for reducing them, and the impact of those options on carbon emissions, economics and performance.

Public understanding of the scientific basis for environmental concerns such as climate change is crucial to give governments a mandate for action and policy-making. It was scientific evidence of the depletion of the ozone layer that led to an international agreement to reduce CFCs, the main cause of ozone depletion. Business and manufacturers were then able to implement this agreement on a level playing field.

### Implications

**MUST** Be open and transparent about any evidence used and value social, environmental and economic factors.

**MUST** Take into account any relevant evidence in decision-making.

**SHOULD** Report impact of activities on society and environment through transparent and systematic measurement and evaluation.

## NUDGES

- 1 What evidence do you take into account when making decisions and what impact does that have?
- 2 How would measuring and reporting the full range of your impacts change your organisation?
- 3 How can environmental and social data help you solve your organisation's challenges?
- 4 Who can you work with to gain better evidence for business decisions?



Empathy and understanding should be shown between people, communities and cultures globally.

### What is Empathy?

Empathy is our ability to respond to how someone else is feeling, and comprehend the way they look at themselves and the world.

### Why is this critical?

Some lifestyles lead to a greater depletion of the Earth's resources than others. Some people will be more vulnerable to changes in the Earth's ecosystems than others, and at different times. It is important for people to see themselves as connected to each other and to look beyond national, cultural, biological or religious differences. Historian Theodore Zeldin concluded, "learning to empathise with people different from ourselves is one of the most effective means of establishing equality that modern society possesses". Designing with empathy can lead to new innovative products or services that better meet the needs of society. Empathy will help to avoid or mitigate environmental or social collapses, and strengthen markets and economies for the future.

### Implications

**SHOULD** Encourage empathy and cooperation between businesses, countries and communities.

**SHOULD** Plan and design from an empathetic perspective.

**COULD** Promote flow of information and knowledge between people and communities to enable empathy.



## NUDGES

- 1 How can your organisation build cooperation between organisations and empathy amongst communities?
- 2 How can you better understand the motivations and needs of your customers?
- 3 Who do you need to work with to build desirability and usability into your products and services?
- 4 How can you develop more citizen-centred solutions?



All enterprises should consider the interdependence of human and natural systems.

### What is Interdependence?

Interdependence refers to the fact that human systems are critically linked to each other and to other systems such as ecosystems (climate and weather patterns, water flows) and that human societies are reliant on each other for life-sustaining resources, protection and knowledge.

### Why is this critical?

Human systems are all linked to a much wider system and our impact on food production, land use, consumption and resource use has effects on all other parts of the system. For example, there is widespread concern that policies supporting the use of biofuels have caused competition for biofuel crops and land, contributing to food price spikes in 2008 and 2012 and potentially putting millions more into poverty and increasing malnutrition.

Many of the different elements in this framework are interdependent. For example, climate change affects and is affected by biodiversity and land use, this affects agricultural productivity and subsequently our food security. This may in turn affect livelihoods, income, nutrition and political stability. The costs of such consequences are often not paid for directly by organisations, but if human activity leads to biodiversity loss, this will in turn undermine the economic value that can be derived from that lost biodiversity in the future.

### Implications

**SHOULD** Take into account direct and indirect impacts of economic activity on human and natural systems and vice versa.

**SHOULD** Value and report the true costs and impacts of resources used, eg paying for biodiversity loss.

## NUDGES

- 1 What environmental and social pressures affect your supply chains and customers?
- 2 How would your organisation change if it accounted for the true value of the natural systems it draws on (for example, clean air)?
- 3 Who can you partner with to better understand and manage environmental and social externalities?



## Stocks of non-renewable resources must not be depleted faster than the introduction of substitutes or discovery of new sources.

### What is Non-renewable natural resources?

Natural resources that cannot be replaced at the rate at which they are being consumed, such as metal ore, fossil fuels and some aquifers. Once depleted there is no more available to meet future needs.

### Why is this critical?

Increasing pressure on resources (eg through population growth, growing per capita consumption), combined with increasing scarcity of non-renewable resources that are more difficult to access, will drive up competition, volatility and cost of raw materials. This increases the need for more efficient use, recycling where possible, and development of alternative materials or processes that do not require the scarce material.

Commodity prices have increased sharply since 2000 and during the next decade we will use more oil, gas, iron, and other mineral resources than have been consumed throughout human history. Oil prices are near their historical high. This makes it more commercially attractive to exploit difficult-to-extract fossil fuels, such as tar sands or shale gas. While these may satisfy the need for energy, they do so by damaging local biodiversity and land use, and adding to climate change in both their extraction and use.

### Implications

**MUST** Reduce depletion rates of non-renewable resource stocks.

**MUST** Improve the material efficiency of the economy, for example by developing closed-loop material systems.

**COULD** Provide sustainable alternatives to non-renewable resources.

## NUDGES

- 1 What would be the consequence to your business of a trebling in cost of a key raw material or a limit in its supply?
- 2 Can you develop a solution that omits the need to rely on a scarce resource?
- 3 How can you change your business model to retain greater control of key resources through circular supply chains?
- 4 Who can you partner with to get your stuff (products, components, materials) back in a closed loop?

## EDUCATION



# There must be universal access to education.

## What is Education?

The process of acquiring knowledge and understanding.

## Why is this critical?

Education provides children and adults with the tools for learning. Literacy, in particular, is at the heart of basic education, and is essential for eradicating poverty, reducing child mortality, curbing population growth and achieving gender equality. An estimated 776 million adults – or 16% of the world's adult population – lack basic literacy skills. About two thirds are women. Most countries have made little progress in this area in recent years.

The education and training of a country's workforce is a key factor in determining productivity levels and business growth. The benefits of education are also felt through lower crime, increased civic participation, better health and so on. There are huge disparities in the quality of education that children receive, which has knock-on effects on life skills and opportunities.

## Implications

**MUST** Support universal access to free primary and secondary education, and ensure marginalised groups, such as girls and rural dwellers, have full access to educational opportunities.

**SHOULD** Improve standards and consistency of education.

**COULD** Use schools as critical hubs for wider community activities.

**COULD** Include sustainable development issues in teaching and learning.

## NUDGES

- 1 How could you play a role in improving education standards?
- 2 How might increasing levels of education create change in your market(s)?

## ENERGY



# There must be fair and equitable access to sustainable energy.

## What is Energy?

Energy is the ability or capacity of a physical system to do work. Energy exists in many forms such as heat, kinetic, chemical or mechanical energy, light, potential energy and electrical.

## Why is this critical?

Access to and use of energy in various forms is fundamental to achieving and maintaining quality of life. For example, energy is a pivotal factor in reducing poverty – without it, opportunities for education and employment are limited. According to the UN, over three billion people in developing countries rely on traditional biomass for cooking and heating, and 1.5 billion people are without electricity.

The provision of energy is a global industry. The price of hydrocarbons (oil, gas and coal) has a direct effect on the state of the global economy, dictates the fate of many other industries and is a significant factor in geopolitical security. The volatility of energy prices in the short term has a major impact on economies and businesses, in their ability to access and pay for vital goods and services.

The poorest quarter of humanity consumes less than 3% of worldwide primary energy supply; whilst the US, with less than 5% of the world's population, claims more than 27% of primary commercial energy. World Energy Outlook 2011 predicts energy demand to rise by one third from 2010-2035, with 90% growth in demand from non-OECD countries.

Current forms of usable primary energy supply are unsustainable; resources are depleting and, for hydrocarbons, may become potentially unusable due to their effects on global climate. The International Energy Agency estimates that \$48 billion needs to be invested each year if universal access to energy is to be achieved by 2030. There are different predictions of the future energy mix needed to meet demands, creating significant risks and opportunities for business, government and communities worldwide in terms of generating and supplying efficient and low-carbon energy in the future.

## Implications

**MUST** Use energy as efficiently as possible.

**SHOULD** Explore innovative solutions in energy supply, demand, storage and distribution to provide fair and equitable access to energy.

**SHOULD** Seek to achieve a greater level of self-sufficiency by generating own low or zero-carbon energy.



**COULD** Be an effective voice for the establishment of sustainable energy systems.

## NUDGES

- 1 How could your organisation use less energy and enable others (like customers) to use less energy and access affordable energy in a resource constrained future?
- 2 How will a more distributed energy network drive change in your market(s)?
- 3 How secure is the energy supply for your operations?
- 4 How will your customers needs change in different future energy scenarios?

HEALTH



People must have the opportunity to lead healthy, active lives and have access to reproductive healthcare.

### What is Health?

To have sound mental and physical wellbeing that allows individuals to participate to their full potential in society and the economy.

### Why is this critical?

Keeping people healthy is essential to leading a fulfilling life and contributes to a wide range of positive social and economic outcomes. For example, good health is linked to economic growth, political stability and reduced likelihood of conflict. There is a growing body of research highlighting that happiness preserves good health and a shift is starting in the UK towards preventative healthcare. Fundamental components of a healthy lifestyle include adequate nutrition, exercise, healthy environments, access to preventative and restorative care, and reproductive healthcare. Access to adequate levels of these (eg through education) is critical to protecting human welfare and sustaining economic and social development. Currently, over 100 million people fall into poverty every year because they have to pay for healthcare. Roughly 215 million women in developing countries continue to use ineffective methods of birth control or none at all. By addressing the unmet need for contraceptive information and services, roughly 22 million unplanned births, 25 million abortions and over 150,000 maternal deaths per annum could be avoided.

Increasingly, health systems will need to respond to differing demands and priorities. By 2020 there will be over a billion people aged over 65 on the planet, placing further pressure on healthcare systems. Projected effects of climate change, such as food and water insecurity and changing patterns of disease will have huge implications on healthcare and lifestyle choices.

### Implications

**MUST** Enable access to adequate nutrition and healthcare.

**MUST** Devise cost-effective care approaches.

**MUST** Provide education about healthy lifestyle choices and reproductive rights.

**COULD** Develop products and services to manage chronic conditions at home.



## NUDGES

- 1 How can your organisation contribute to building levels of good health in society both directly and indirectly?
- 2 How can your organisation enable others to lead healthy, active lives?
- 3 What opportunities are there for your organisation in helping people live an active, independent life for longer?
- 4 What does your business model look like with a societal focus on prevention of illness rather than treatment?

## WATER AND SANITATION



There must be universal access to safe drinking water and effective sanitation.

### What is Water and Sanitation?

Safe drinking water is suitable for human consumption and meets WHO guidelines or national standards. Effective sanitation comprises hygienic sewage disposal for a clean and healthy living environment.

### Why is this critical?

Safe water and hygienic sanitation are essential for health. Today, 780 million people lack access to clean water. Worldwide, 84% of people have access to improved sources of drinking water, but the longer term future is less certain: 47% of the world's population will be living under severe water stress by 2030, a situation that will almost certainly be exacerbated by climate change. People living in informal settlements (ie slums) often pay 5-10 times more per litre of water than wealthy people living in the same city. Some 2.5 billion people worldwide still do not have access to improved sanitation with serious health implications – 3.4 million people die each year and approximately one in four children under the age of five is underweight partly as a consequence of this. The economic benefits of investing in improving water and sanitation are between US\$3 to US\$34 for each US\$1 invested. The World Health Organization estimates that halving the proportion of those globally without access to safe drinking water and adequate sanitation by 2015 is estimated to result in 272 million more school attendance days a year. The value of deaths averted, based on discounted future earnings, would amount to US\$3.6 billion a year.

### Implications

**MUST** Support access to water supplies and sanitation facilities.

**MUST** Not pollute water supplies.

**SHOULD** Deploy affordable technologies to address water and sanitation issues.

## NUDGES

- 1 Do you release any pollutants into the water system? If you do, how do you manage it?
- 2 How could you improve access to clean water and sanitation facilities?
- 3 Who can you partner with to improve the access to sanitation and clean water of your customers?



## Society must build resilience of natural and human systems to cope with shocks and stresses.

### What is Resilience?

Resilience is the ability to absorb disturbances, evolve to cope with dynamic change and adapt and learn from the experience.

### Why is this critical?

A system with a low resilience – whether a natural habitat, a city or the financial capital markets – can only cope with small shocks and stresses. All our systems are vulnerable to shocks and stresses, which are becoming more likely for two reasons. First, the current mode of unsustainable development is putting many natural and human systems under strain, resulting in extreme and unpredictable events (from droughts to civil unrest). Second, in our global society, shocks are transmitted further, faster and with greater complexity.

Building resilience is vital because predicting exactly what will happen is impossible. For example, the collapse of Lehman Brothers affected financial markets, the world economy and government debt, with further consequences on job prospects for young people, provision of public services and civil unrest. If the financial capital markets had been more resilient then these cascading effects could arguably have been reduced or avoided.

### Implications

**MUST** Design and act for recovery and flexibility and not just for growth and efficiency, eg through building solutions that are adaptable, and a diverse and secure supply chain.

**SHOULD** Be able to respond effectively, build ongoing processes for learning, recovery and flexibility into strategy.



## NUDGES

- 1 How well has your organisation coped with dynamic change in the past?
- 2 How prepared are you for sudden and unpredictable change in the future?
- 3 What is your organisation's role in a more resilient economy?
- 4 How can you provide solutions for your customers that help them respond to dynamic change?



People must have the opportunity to earn income at a level sufficient to live well. There must be no extreme poverty.

### What is Income?

Income is money or equivalent received in exchange for labour or services, sale of goods or as profit from investment. This is sufficient if it allows for the satisfaction of basic needs that include food, water and sanitation, energy, shelter, healthcare and education (on the basis that these are available). In 2008 an estimated 1.29 billion people lived below US\$1.25 a day – living in what the World Bank defines as extreme poverty.

### Why is this critical?

Most people work in order to earn money. Yet, in many parts of the world, access to adequate and regular income is not guaranteed. Evidence from a range of studies suggests that there is a correlation between income inequality and health and social problems. Insufficient income can lead to extreme poverty, one of the most critical barriers to human development. This is the most important barrier to accessing education, and uneducated people (especially women and girls) are less likely to attain productive employment, access family planning resources and achieve gender equality. When these are out of reach it can lead to a vicious cycle of further poverty.

The OECD traces rising inequality around the world to a decline in income redistribution: lower taxes on the rich combined with lower benefits for the poor widen the income gap. The International Monetary Fund has found that greater income equality positively correlates with stronger economic growth, concluding that a 10% decrease in inequality increased the expected duration of economic growth by 50%. Income security allows us to provide for events such as sickness, old age, unemployment and maternity. Around the world, the majority of older people lack a secure income, and fewer than one in five people over 60 receive a pension.

### Implications

**MUST** Offer at least a living wage to all employees regardless of gender, age, experience or other factors.

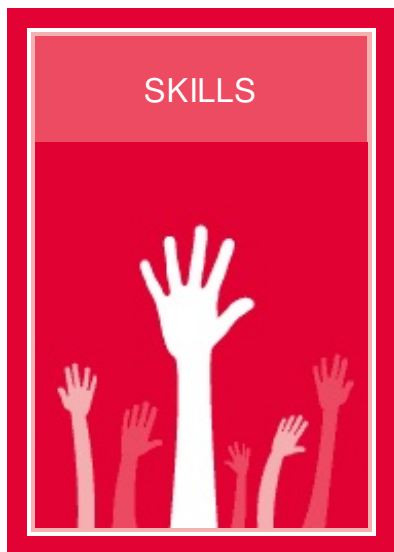
**SHOULD** Support pro-poor and sustainable economic growth policies.

**COULD** Develop products, services and business models that address the needs of the poor.



## NUDGES

- 1 Do you pay a fair price for your materials, workforce and throughout your supply chain?
- 2 Does your organisation help to improve income levels for the poor?
- 3 How can you use entrepreneurship, distributed supply/manufacture or franchising to scale your business?



## Build skills and capabilities for individuals to participate in the economy and society.

### What is Skills?

A skill is the learned capacity to carry out a task for predetermined results.

### Why is this critical?

Skills enable people to participate in society and the economy. Without basic skills, it is difficult, if not impossible, for people to engage with many of the social foundations that make up a sustainable economy. For instance, universal access to information is almost useless without literacy and numeracy; resilient communities depend on people having good interpersonal skills.

Good skills are vital for an organisation's success, particularly management and leadership skills. Investing in individual skills attracts workforce, improves productivity and morale and retention of staff, as well as attracting investors. People's skills are vital to their job prospects, and therefore to their ability to earn and participate in the economy. The skill of knowing how to learn enables everyone to grow, flourish and adapt.

### Implications

**MUST** Enable people to gain the basic skills for participating in society and the economy - these will often be delivered through education and experience.

**SHOULD** Invest and build wide-ranging skills and capacity of individuals to realise their potential.

**SHOULD** Build the skill of how to learn.

## NUDGES

- 1 Does your workforce have the right skill set? What effect does this have on your organisation?
- 2 How can you ensure that your current and future workforce have the right skill set required?
- 3 How can you build skills development into your projects and processes?

## SHELTER



# There must be adequate shelter for all.

## What is Shelter ?

The Habitat Agenda defines 'adequate housing' as "more than a roof over one's head". It also means adequate privacy; space; physical accessibility; security; security of tenure; structural stability and durability; lighting, heating and ventilation; as well as associated adequate basic infrastructure, such as water supply at an affordable cost.

## Why is this critical?

Adequate shelter provides security and warmth, which enable people to live well. It is a cornerstone for the realisation of human rights, for livelihoods and for poverty reduction.

Good affordable housing is in short supply, both in the developed world and developing countries. According to UN Habitat more than a billion people "still lack adequate shelter and are living in unacceptable conditions of poverty". It is estimated that 78% of the world's urban population are low-income families living in slums, and the absolute number of slum dwellers is rising due to rural-urban migration and population growth. Households need an average of 8 to 12.5 times their annual income to buy a house in developing countries.

The provision of housing impacts local economies through the economic activity it generates (eg construction), and the provision of spaces for living, working and leisure activities.

## Implications

**MUST** Provide adequate housing available to all and a stable market for housing.

**SHOULD** Raise standards of homes so that they are more accessible, flexible for different needs, environmentally sustainable, affordable and so on.

**COULD** Enable others to provide adequate housing.

## NUDGES

- 1 How could you be proactive in improving the standard and affordability of housing?
- 2 How do changing living conditions affect the needs of your customers?
- 3 How can you help provide more efficient buildings?