Demography – Challenges and Opportunities in a Changing World

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Executive Summary

The aim of this paper is to understand and highlight the various global challenges created by current and future demography trends; identify business solutions and opportunities that create both sustainable and financial benefits; and identify companies which are well positioned to benefit from these demographic challenges.

World population dynamics have always been in constant change, and the world today is no different. Current projections show a continued increase of population (although at a declining growth rate), with the world’s population expected to surpass the 9 billion mark by 2050. This population growth is characterised by two main trends:

- Growing Populations: demonstrated higher population and economic growth rates, primarily in developing regions;
- Ageing Populations: shown by a higher share of elderly people, especially in developed countries.

Both of these separate, yet interrelated, trends are having significant consequences on the workforce, consumer base and associated shopping behaviour, and have even extended to environmental pressures. For example, skills shortages are likely to be exacerbated in developing countries where educational shortfalls may exist, and in developed markets where high proportions of the working population near retirement age with little prospect of being replaced.

From an investment perspective, a number of business-related solutions have been identified which allow for both sustainable and financial benefits. These solutions cover a wide range of sectors, such as education service companies which seek to address the skills shortage challenge, the provision of affordable telecom services for lower-income consumers, healthcare products specifically geared towards ageing populations, as well as water/waste utility companies which offer basic sanitation services.

From our analysis, the market today appears to integrate demographic trends into company valuations and growth prospects of companies which are well-aligned to provide business solutions. But a thorough understanding of demographic trends still offers a multitude of business opportunities and solutions for an investor.
1. Introduction – People in an ever changing world

Demography is the study of population size, growth and age structure, and of the forces (fertility, mortality, migration) that lead to population change. The world as we know it is constantly changing and evolving. Perhaps the greatest influence on this change is demography, the changing dynamics of world populations and their resultant impacts our environment and our society in general. The world’s population has risen from two billion in 1930 to current levels of almost seven billion, and with nine billion projected by 2050. Based on a new report published by the UN Population Division world populations could double to 14 billion by 2100.


This unprecedented growth in population has never before been witnessed, and is characterised by a number of separate yet often interrelated outcomes:

Geographical breakdown
Most of that population growth will happen in the developing world, with the fastest growth in the fifty least-developed nations. By 2050, it has been estimated that 86% of the world population (almost eight billion people) will be concentrated in less developed regions of the world.

Age structure
The proportion of seniors is growing more rapidly than younger populations on all continents due to a combination of longer life expectancies and declining fertility rates. The consequence of this will be the increase of the median age of world populations from its current level of 28 years to over 38 years in 2050. This will be more pronounced in more developed countries seeing a median age of almost 46 years in 2050. By 2050, approximately two billion people will be aged 60 or over.
Urbanisation
Globally, the majority of future population growth is likely to occur in cities, especially in the continents of Asia, Africa and Latin America, with lower income demographics comprising a large proportion of this growth. It has been estimated that over 60% of the world population will live in urban areas within the next 25 years.

Growing Populations are characterised by:

■ Higher population and economic growth rates in developing regions compared to developed regions;
■ Increased international migration;
■ Growing rates of urbanisation.

Ageing Populations are characterised by:

■ Higher share of elderly people, especially in developed countries compared to developing countries;
■ Increased life expectancy, particularly among women;
■ Lower fertility rates.
2. What are the Challenges posed by Demographic Changes?

There are a number of individual, governmental and societal challenges posed by demographic change which are attributed to both growing and ageing population trends, namely:

**Workforce**
Skills shortages are likely to be present in:
- Developing countries where educational shortfalls may exist;
- Developed markets where a significant proportion of the working population nears retirement age, with little prospect of worker replacement.

**Changes in the workforce**
In more developed countries, a shrinking of the working age population has already been observed, and will likely be exacerbated further in the coming years. Current demographic projections show that the working-age population (15-64 years) in the EU will fall by around 15% during the next 50 years. However, this trend has not just been confined to developed countries. In China, for example, dramatic fertility decline and improved longevity over the past two decades are causing China’s population to age at one of the fastest rates ever recorded; elderly people in China are projected to triple from 8% to 24% between 2006 and 2050, to a total of 322 million(1). As a consequence employment and skills gaps will become more evident across a wide range of sectors, with subsequent decreases in economic growth and productivity. In addition, according to the OECD, barring any change in work and retirement patterns, the ratio of older non-working people per worker will almost double by 2050, putting a strain on government social support and public finances. Pension, savings and retirement concerns will intensify further as four out of five older adults worldwide have no retirement income from pensions or government programmes. This places higher demands on the working-age population, in the form of higher taxes and other contributions, in order to maintain a stable flow of benefits to older demographics. With this in mind, migration policies may also evolve, further diversifying the workforce.

**Consumer Base**
Product/service needs for:
- Low-income consumers in developing markets;
- Consumers with higher disposable incomes in all markets;
- Ageing populations in developed markets.

**Changes in the consumer base**
In more developed markets, demographic changes prompted by a more elderly population will result in a declining consumer base, in addition to demand for products and services tailored to ageing customers. In developing markets, challenges of meeting the needs of an expanding consumer base need to be considered; in particular the needs of lower-income consumers with generally low but growing purchasing power. Across all markets, although the trend is more pronounced in developing economies, the rising affluence of consumers with higher disposable incomes and associated spending power is also being observed, resulting in an increasing preference for premium and luxury products and brands. Rising GDP per capita and associated changes in lifestyles and consumption behaviour will thus support greater growth in consumer goods’ demand.

**Resources and the Environment**
Products and services which lessen impacts on resource depletion and environmental degradation are key.

**Increasing pressure on resources and the environment**
The burgeoning human population is often acknowledged as one of the underlying causes of environmental issues such as climate change, deforestation, depletion of water resources and loss of biodiversity. The increasing rate of urbanisation is further intensifying this situation. According to a WWF report, human populations currently consume approximately 25% more natural resources than the Earth is able to produce. If current consumption rates continue, by 2050 a global population of over nine billion will require the biological capacity of two Earths(2). The pressure that growing populations are placing on the earth’s natural resources have further heightened resource scarcity challenges such as energy and food, among many others.
3. Business Opportunities and Solutions to Demographic Challenges – the Investment Case

Each of the three challenges posed by demographic change above, lend themselves to a number of different business and investment opportunities.

Three main challenges resulting from demographic change have resulted in numerous business opportunities for companies.

As a consequence, companies that are positioned to offer a number of various product and service solutions which can substantially reduce demography-induced pressures can take profit from this trend. These business solutions will need to be sensitive to country and region exposure as differing levels of economic development, population age structure, etc, will provide differing opportunities.
Five main pillars have been identified, gathering business opportunities and solutions to demography-related challenges

### Challenges

**Skills Shortages**
- Education Services
- Employment & Outsourcing Services
- Automation Services

**Base / Bottom of the Pyramid (BOP)**
- Affordable Healthcare
- Affordable Food & Nutrition
- Affordable Finance

**Wealthier Consumers**
- Aspirational Products
- Financial Security

**Ageing Population-focused Products**
- Healthier Living & Quality of Life
- Hygiene & Sanitation

**Resource Scarcity & Environmental Degradation**
- Food Productivity
- Management Resources

### Solutions

**Changes in the Workforce**
- Access to Telecoms
- Access to Transport
- Access to Energy
- Fairtrade Systems

**Changes in the Consumer Base**
- Healthier Living & Quality of Life
- Financial Security

**Pressure on Resources & the Environment**
- Food Productivity
- Management Resources

Source: Dexia AM, 2011

The following sections will focus on introducing the five main pillars of business opportunities and the most important solution in term of activities. This will include detailed case studies which will consider the market potential, sustainability and financial opportunities, as well as examples of companies which are well positioned with regard to the thematic solution detailed.
3.1. Skills Shortages

Demographic changes are having significant impacts in the age composition and skills set of both the local and global workforce. This includes a lack of education and vocational training as well as an ageing workforce across industries, which is being compounded further by poor recruitment and employee retention policies or inadequate provision of training and employee development opportunities at company level. As a result, a number of industries are losing many of their skilled workers to retirement. For example, in Canada an estimated 40% of the current mining workforce is expected to retire in the next 10 years while an extra 81,000 skilled people will be required to meet future workforce needs. This skill shortage has been aggravated by the lack of qualified new entrants into the labour market, both in developing and developed markets. It has been estimated that one in three Europeans of working age has few or no formal qualifications, making them 40% less likely to be employed than those with medium-level qualifications. The problem of labour shortages in Europe is compounded by low labour force participation rates, and this is set to become more acute in the future due to the ageing of populations. Between 2006 and 2020 CEDEFOP expects 85 million jobs to become available because of natural wastage, and projects that a further 20.3 million new jobs will be created in Europe. In comparison, Eurostat projects that the EU's working-age population (consisting of those aged 15-64) will fall by 6 million over the same 2006-2020 period. CEDEFOP notes that the participation rate would need to rise from around 71% in 2006-2008 to nearly 74% in 2020 in order to meet increased labour demand. Such an increase would still leave a labour shortage of 12 million workers owing to skill gaps and occupational mismatches.

In high growth markets such as China, India and parts of Latin America, talent shortages are as critical as, and in some cases more acute than in the rest of the world. This only further serves to exacerbate the chronic skills shortage problematic. According to PWC’s Annual Global CEO Survey the majority of business leaders say looming skills shortages is a big issue. Two-thirds say they face a “limited supply of candidates with the right skills”, and 54% cite “challenges in recruiting and retaining younger employees”. This skills shortage concern will inevitably have a negative financial impact on company operations – in terms of reduced employee productivity, higher hiring and training costs, notably due to turnover, project delays etc.

Percentage of employers having difficulty filling jobs due to lack of available talent (Focus EU)

Source: Manpower, 2010
**Main business solutions to the skills shortage issue:**

- **Education Services:** companies providing educational material for educational systems with a significant client base in emerging and developing countries including those involved in adult education, languages as well as private higher education.

- **Employment & Outsourcing Services:** companies providing employment and human resources consultancy services, facilities management companies and similar services.

- **Automation Services:** companies that provide automation solutions that alleviate skills shortages in the workforce.

*While EU countries are not equal in terms of recruitment and job vacancy rates, forecasts focusing on future qualification needs highlight growing difficulties to come.*
Business Solution Example: Education Services

In the context of emerging and developing economies, lack of education is a major obstacle to development as inequitable access to schooling perpetuates social and economic inequities. At country level, this impedes the development of industries as investors fear the imbalance between number of required skilled workers and local labour pools’ capabilities. While private education institutions still remain unaffordable for the large majority, new technologies and increased access to Internet may help in offering a cheaper alternative, subsequently boosting demand. For developed economies, when considering the growing shortage of competences, labour opportunities will soar for multi-skilled workers (increased job mobility) as well as for workers able to adapt to new technical (e.g. more automated process) or cultural (e.g. migrant workers) environments.

Gross enrolment ratios by level of schooling, 1970-2007

More children attend school, but there is room for improvement in secondary and higher education.

In developing economies, the demand and growth potential for education is substantial. In India for example, demographics, rising discretionary income and sustained government spending are clear key education consumption drivers in India. Annual student enrolments in higher education are expected to grow at a CAGR of nearly 8.7% during 2010/2011 to 2012/2013, while the market size of higher education will witness a CAGR of approximately 15% to pass USD 22 billion by 2013(7). India plans to raise its expenditure in the education to INR 520.6 billion (USD 11.5 billion) in the next financial year, reinforcing the company’s ambition to create a skilled workforce to keep with the country’s fast-paced growth. Education consumption is likely to reach USD 150 billion by 2025, making India one of the world’s largest education economies. Everonn Education is an Indian-based company which provides education and training and sales of related equipment in the Indian domestic market. Company revenues are mainly derived from implementation of computer education in government schools as well as the implementation of technology-enabled learning solutions in various private schools and colleges. Presently, Everonn has over 8,000 learning centres which encompass more than 3 million students across 27 Indian states. From a financial point of view, Everonn has reported high growth of 50-80% in revenues and profits in the last three years.
Another well-positioned company is **Pearson**, which is primarily an educational publisher and services provider with over 70% of revenues derived from education-related services. It provides test development, processing and scoring services, in addition to publishing curriculum material under a range of imprints. The company derives 21% of its revenues from Asia and other parts of the world, presenting it with strong opportunities to expand in unsaturated media markets. As a consequence, Pearson has accelerated international expansions, investing in operations in countries such as China, India, Southern Africa and Latin America. There is likely there will be further growth and market share gains to come with the steady shift to digital education programmes and to educational sales to households, particularly at a time when Pearson’s competitors are negatively affected by capital constraints.
3.2. Base/Bottom of the Pyramid (BOP)

There are certain essential needs and services, basic means by which to live, that are universally considered to be a human right. These include the right to food, healthcare and medication; where the lack of access is often associated with poverty. Ensuring access to basic and essential goods and services is thus vital to facilitate the eradication of poverty. The World Resources Institute and International Finance Corporation have estimated that the “Base of the Pyramid” (BOP) consumer market – which includes four billion people worldwide with incomes below USD 3,000 in local purchasing power – is currently worth approximately USD 5 trillion. It is thus clear that certain products and services are more inherently geared to providing solutions to the BOP demographic, and the ability to be successful in serving BOP markets regardless of the sector of operation is to find innovative ways to overcome poor infrastructure and dispersed low-income populations. Successful strategies allow for larger market share gains, and the establishment of brand and customer loyalty to ensure the viability of products and services in the long-term.

The BOP market of affordable food and nutrition has currently the largest market potential, with the market estimated to be worth USD 2,895 billion. This is not a major surprise as food clearly dominates BOP household budgets. Income remains the factor with the greatest influence over dietary changes. Therefore, it can be seen that as incomes rise, the share spent on food declines, while the proportion of spending on transport and telecoms grows rapidly. Multinational companies have long been pioneers, especially in food and consumer products, while large national companies have proved to be among the most innovative in meeting the needs of BOP consumers and producers, especially in such sectors as housing, agriculture, consumer goods, and financial services.(8)

Estimated BOP market by sector, USD 5 trillion

Source: WRI/IFC, April 2007
Main business solutions serving BOP needs:

- **Affordable Healthcare**: companies that consider public health and those creating low-cost business models (e.g. generics) in emerging and developing markets;

- **Affordable Food & Nutrition**: food and beverages companies which target lower-income consumers;

- **Affordable Finance**: financial service companies with a significant client base in emerging and developing countries which are involved in lending to SMEs and/or the public sector; microfinance activities or community banking;

- **Access to Telecoms**: companies providing telecom infrastructure services (fixed line and wireless) in emerging and developing countries, particularly those countries with low ICT penetration rates, as well as telecom/Internet service providers with low-cost business models in emerging and developing markets;

- **Access to Transport**: companies which facilitate affordable mobility for people and goods;

- **Access to Energy**: companies that provide low-cost energy solutions in emerging and developing markets;

- **Fairtrade Systems**: companies that are able to demonstrate their commitment to the sourcing and supply of fairtrade or similarly branded products.
Business Solution Example: Access to Telecoms

Perhaps the most interesting BOP success story is that of telecoms. With the spread of the Internet and mobile technologies, existing knowledge is increasingly accessible for larger parts of the population, as well as the marketplace. Mobile telephony is offering new and critical communication opportunities to regions that used to be without access to ICT. For example, in Sub-Saharan Africa, while fixed telephone line penetration continues to be approximately 1%, mobile penetration has exceeded 30%. Africa remains the only continent that still has potential to increase wireless penetration significantly. Overall, developing countries have achieved 68% of mobile cellular penetration rates at the end of 2010. The growth of the Internet worldwide has also been sizeable. However, while 71% of the population in developed countries are online, only 21% of the population in developing countries are online. Thus, opportunities are available for companies which seek to provide telecommunication and ICT solutions in these markets, particularly to customers in remote areas. According to WRI/IFC, the BOP market size for ICT is estimated to be USD 51 billion.

Digital Inclusion Index 2011

Source: Maplecroft, 2011

The Digital Inclusion Index ranks countries according to their level of, or lack of, “digital inclusion” - the ability to use and access information communication technologies (ICT) such as computers, the Internet and mobile phones.

An interesting player in this area is Millicom International Cellular (MIC), which offers mobile telephony and cable services in 13 emerging markets in Central and South America, Africa and Asia. While MIC operates in countries with low GDP/capita, it is financially very successful. Its main strategy is to offer mobile telephony services to lower-income retail segments, mostly through prepaid services with low denomination charges. In addition, billing is on a per-second basis to make it attractive to the low budget user, and its unique distribution system is designed to reach remote rural areas. Affordability programmes such as these will play a major role in Africa, where mobile penetration is among the lowest in the world. This successful strategy is evidenced by the fact that in 12 out of 13 markets, MIC falls within the top two operators in terms of market share. During Q4 2010, the number of customers was up 14% and organic revenue growth was double digit versus Q4 2009. Additionally, market share is stable in all regions while churn is a respectable 4.9%. Revenue growth is expected to remain double digit for the next couple of years.
3.3. Wealthier Customers

This pillar considers the phenomenal growth of both middle- and high-income demographics globally and their resultant impact on driving the growth of consumption trends. The largest potential in for middle class growth lies in emerging Asia where the majority of economies are experiencing rapid economic growth coupled with a significant proportion of the population rising from a low income base. As estimated by the World Bank, the global middle class is likely to grow from 430 million in 2000 to 1.2 billion in 2030; with the bulk of this expansion attributable to just two countries – China and India\(^{(10)}\). By 2020, the total income of households with a disposable income of USD 5,000-15,000 in emerging Asia will account for 4.9% of global annual disposable income, up from 0.8% in 2000. Thus, the rising middle class presents immense opportunities for global consumer markets as they will be characterised with higher discretionary incomes to buy more sophisticated higher-end consumer products.

The growth of the luxury goods market is another aspect to consider, and which is being driven by the increase in both high-earning households and High Net Worth Individuals (HNWIs). While the US remains the largest market for luxury goods, contributing over 33% of the global market for these goods, emerging and developing market economies such as Brazil, China and India are growing in importance. For example, over the period 2005-2010 the Indian luxury goods markets has increased by 306% in real terms; and is currently valued at USD 1.65 billion\(^{(11)}\). The overall luxury products markets has recovered from the global financial crisis, and is set to grow by 10% in 2011 to EUR 168 billion, driven by a strong pickup in demand in the United States and China\(^{(12)}\). Product categories of interest include luxury apparel, jewellery and timepieces, premium beauty and personal care items, premium automobiles and luxury electronic gadgets, among others.

However, the practicalities of identifying companies involved in the provision of “Aspirational Products” is problematic from a sustainability point of view. Unlike other solutions identified, Aspirational Products do not offer a sustainable solution to demography-related challenges and associated problems, but rather provides an offer that only answers the immediate consumption demands of more affluent consumers. Furthermore, this can be considered to fuel the unnecessary overconsumption of already limited resources.
3.4. Ageing Population-focused Products

There are a multitude of burdens that the ageing of populations will present. From a social perspective, population ageing influences living arrangements, housing demand, migration trends, epidemiology and the need for healthcare services. From an economic viewpoint, population ageing will have an impact on savings, investment and pensions etc, and raises questions about the ability of ageing populations to be financially stable.

However, this trend does indeed provide a number of market opportunities. The rising generation of over-65s is already leading to strong growth for a number of consumer markets across the globe. These older consumers will support the growth of several consumer industries such as those offering over-the-counter medicines, healthcare/comfort related devices, nutritional products or more integrated financial products (such as insurance and financial advice).

### Main business solutions serving ageing-population consumer needs:

- **Healthier Living & Quality of Life:** companies which provide healthcare services and solutions for diseases prevalent among ageing populations, as well as companies which offer specific products which aim to help consumers maintain a high living standard for as long as possible;

- **Financial Security:** companies offering pension financing products such as life insurance and savings products and which are mainly positioned in transition and developed economies.
Business Solution Example: Healthier Living & Quality of Life

From 2000 until 2050, the world’s population aged 60 and over will more than triple from 600 million to 2 billion, and in reality, the quality of life is a critical aspect for senior consumers who want to maintain as high a living standard for as long as possible, or at a minimum, limit changes to an expected standard of living. Industry bodies estimates that healthcare expenditure for people aged 65 and over are nearly four times that of younger people. Thus companies which research, develop, manufacture or retail vaccinations and/or medications which seek to either prevent a disease or poor health, or treats and alleviates the symptoms of the disease or poor health among elderly populations are positioned to benefit from the trend. With this in mind, preventive medicines also include dietary supplements such as probiotics (boosting immune system and facilitating digestion). Functional food products are gaining popularity with the elderly, due to their fortification with ingredients that may prevent many of the ailments associated with old age, and as such, it has been forecasted that the US, Western European and Asia-Pacific functional food and drink market will grow at a CAGR of 5.7% between 2007 and 2012. With the emergence of wealthier seniors, as well as the support of some national regulations (e.g. subsidies), companies providing adult day care services, home health, community services, assisted living or senior/nursing homes are also well places to benefit from this trend.

Medical devices (such as dental implants, hearing aids and orthopaedics) clearly benefit from the growth in ageing populations, especially in more developed countries. Similar trends are also expected in emerging economies, especially orthopaedics. Despite increased physical activity among older generations, ageing populations have a more vulnerable constitution and degenerative diseases such as osteoporosis or arthritis are more prevalent.

Musculoskeletal Diagnoses Delineated by Age

Prevalence of musculoskeletal disorders for people aged over 65
Smith & Nephew (S&N) is a company which is positioned to benefit from the provision of healthcare services for ageing populations in both developed and developing markets. The group operates in the markets of orthopaedic reconstruction and trauma, endoscopy (including arthroscopic) and advanced wound management. Orthopaedics accounted for 57% of its 2010 revenues. While pressure on “standard product” price increases in Europe (accounting for 33% of 2010 group’s revenues) essentially because of austerity measures implemented by government and targeting healthcare costs, the group continue to invest in innovation such as joint customisation. In parallel, the group has invested for years in emerging economies such as China, notably through the creation of surgeon training centres, helping the market to develop but also contributing to specialists’ loyalty to the brand. Emerging market sales have risen 20% per year since 2006. While orthopaedics suffered in 2010 from the market environment, revenue in this division was up 2%. However, wound care and endoscopy are much less discretionary and here revenues were up by 7%. Within wound care the opening of a new a manufacturing facility in China during 2010 will lower costs. S&N continues to improve margins in all divisions, and trading profit was up 14% CAGR from 2006-2010, much more than top line growth.

Care homes are also an interesting field of investment. Orpea is the largest operator of care homes for the elderly, post-acute and psychiatric clinics in France. The group also operates in Belgium, Italy, Spain and Switzerland. Its business has benefitted from the convergence of several factors which are driving the growth of private market share in the sector(17). This includes the increase in life expectancy and dependency of older populations; a decline in elderly support from family members, among others. Orpea not only appears to be well positioned due to its long term expertise in care home management, but also as it has turned key differentiating factors into tangible opportunities (such as through the early development of special Alzheimer units in its care-homes) as well as showing proactiveness in fields such as human resources management (like the ownership of a dedicated training and qualification centre). Given the high demand for its services, the number of people in France aged 85+ is expected to rise by 66% between 2008 and 2015, the company can raise prices 3-4% per year, easily compensating for the growth in costs. Current occupancy rates are 96% and the company opened 14 new facilities in 2010 (bringing it to a total of 364 facilities). Historic revenue growth since 2002 has been 25% per year.
3.5. Resource Scarcity and Environmental Degradation

Despite the recent economic slowdown, scarcity of resources and associated concerns related to environmental pollution are beginning to re-emerge as major issues, particularly in emerging markets. These concerns manifest themselves and are intensified in urban areas which are undergoing rapid urbanisation resulting in problems such as overcrowdedness, contaminated water, poor sanitation and air pollution. Problems are further heightened by emerging problems of industrial and agricultural pollution. Companies that capitalise with solutions stand to benefit from vast opportunities, especially as these markets will become major resource consumers. Increasing consumption of finite resources (e.g. oil) and overexploitation of potentially renewable resources (e.g. water or land) is increasingly placing pressure on their availability and/or quality.

Key priorities include tackling water scarcity to sustain growth, moderating escalating energy demand with a combination of efficiency and renewable solutions, and securing adequate food supplies to meet existing and growing food demand. Market opportunities will expand as local, national and international authorities have shown a growing interest in the fields of imposing limits on resource extraction (e.g. fishing quotas), encouraging recycling and greening of products, requiring better assessment and mitigation of extraction’s environmental impacts, funding green energies, while ensuring the provision of basic services. These business opportunities will concern a wide range of players, from equipment manufacturers to service providers.

Population growth leads to rising consumption and increasing pressure on scarce resources

Source: Goldman Sachs, July 2010
Main business solutions serving resource scarcity and environmental degradation pressures:

- **Food Productivity**: companies which promote changes in consumer patterns towards lower meat diets; offer efficient agricultural technologies (e.g. irrigation); enable increased agricultural productivity in the long-term. This aspect is tackled in more detail within a previous Dexia AM research paper on Food Scarcity\(^{(18)}\);

- **Hygiene & Sanitation**: companies offering waste and water treatment products and services, but also, personal hygiene products aimed at consumers, primarily in emerging and developing markets;

- **Management of Resources**: companies involved in resource exploration; developing alternative materials and processes to traditional resources (e.g. new fuels, recycling, renewable energies); as well as providing resource efficient technologies\(^{(19)}\).
Business Solution Example: Hygiene & Sanitation

An estimated 90% of all wastewater in developing countries is discharged untreated directly into the natural environment, resulting in it becoming a key vector of disease. According to the UN/WHO, some 2.2 million people die globally each year from diarrheal/water-linked disease, among which 1.8 million are children. This situation is reinforced by the lack of resources to promote and preserve health, combined with limited infrastructure for managing waste. Apart from obvious social health impacts, it also affects the economy through reduced productivity and further damages natural resources such as marine ecosystems. For example, in China, the direct costs of water scarcity and water pollution are estimated to be 2.3% of GDP[20].

Ratio of Wastewater Treatment

An estimated 90% of all wastewater in developing countries is discharged directly into rivers, lakes or the oceans.

China Everbright International is a Chinese conglomerate which disclosed for 2010 strong revenues (+60%) and profits (+34%) compared to 2009. While the construction and operation of waste-to-energy power plants accounts for its fastest growing segment, its historical environmental water project branch still contributes to about 30% of its 2010 revenues and profits. This segment engages in the construction, upgrade and operation of wastewater treatment plants, reusable water treatment plants and surface water treatment plant. Owing to urbanisation and industrialisation rates, wastewater is expected to reach 79 billion tons by 2015 compared to 57 billion tons in 2008. Current wastewater treatment infrastructure is still inadequate, and this has resulted in a large demand for investment[21]. During 2010, Everbright water projects treated more than 460 billions m3 of wastewater, representing an increase of 18% compared with the previous year. This increase in volume has had a direct positive impact on operation service revenues and profit.
Another interesting player in the Hygiene & Sanitation field is **Suez Environnement**. The company is regarded to be among the two leading water and waste operators in the world with a presence in 25 countries. It offers a fully integrated range of services along the water and waste value chains. Suez’s contribution to the right of access to water and waste services is clearly demonstrated; during the past 15 years, it has brought drinking water to over 11 million people and connected 5.3 million people to wastewater service networks. The secular growth for environmental services (water and waste management) is mainly driven by new infrastructure needs in emerging markets (along with upgraded installations in developed markets). Suez should be able to increase capex in 2011-2012, while also gradually reducing its gearing ratio. Suez is well placed to take advantage of the continued growth in international water projects, notably through its continuing presence in China.
### 4. Stock Selection and Market Opportunities

From the business solutions discussed and presented above, it is clear that business solutions need to be sensitive to country and region exposure as differing levels of economic development, population age structure, etc will provide differing opportunities. This is shown in the following graph.

**Business solutions to demography challenges will be different depending on the level of economic development**

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Source: Dexia AM, 2011

The following sections show how Dexia AM integrates these business and investment opportunities in its SRI analysis and how different companies are positioned from both a sustainability and financial perspective with regard to an identified demographic business solution.
4.1. Stock selection of companies positioned to offer business solutions

A selection of stocks was made to identify companies well-positioned to offer business solutions to demographic challenges. A top-down approach was adopted, which takes into account the most relevant sustainability themes with regard to demography. With this in mind, stock selection favors more sustainable solutions (such as renewable energies, materials recycling or public transportation) and so largely avoids companies involved in the provision of products, services, and sectors such as automotives, oil and gas, and mining. Based on the business solutions identified above, over 500 demography-related stocks have been selected, combining MSCI World, small- and mid-cap and emerging market companies.

Stock selection aligned with demographic challenges which offer business solutions
(Company selection is based on revenue exposure to products, countries, regions, etc.).

Source: Dexia AM, 2011

The demography selection can be concluded:

- **Healthcare sector are highly represented and there is a greater diversity of sectors among developing economy**: Companies within the Healthcare sector are often highly represented as their inherent business operations easily lend themselves to addressing ageing-population focused challenges. Concurrently, there is a greater diversity of sectors among developing economy solutions compared to developed economies. This is clearest among the business opportunities presented by the Base/Bottom of the Pyramid, where business solutions encompass sectors as diverse and wide-ranging from telecoms to capital goods.

- **Large cap companies are underrepresented in the “Base/Bottom of the Pyramid” to the benefit of small/mid caps and/or emerging market companies**: For the most part, large cap companies appear to be underrepresented in the “Base/Bottom of the Pyramid” (BOP) market opportunities and solutions selection when compared to their weight in major indices. This is due to a number of factors such as local and regulatory barriers to entry in certain key BOP markets such as India, underestimation of growth potential in BOP markets, as well as Western modes of consumption have yet to become the norm. In addition, within the company selection, small/mid caps and/or emerging market companies, are more likely to operate easily identifiable “pure-play” business models that are fully in line with demographic-oriented challenges. This results in a less diluted impact on revenues as well as a better potential for growth.
Case Study: Access to Telecoms at the Base/Bottom of the Pyramid

As previously mentioned, significant importance was attached in our selection process to identify companies showing the ability to account both for sustainability and financial characteristics. To illustrate this, the example of “Access to Telecoms” has been taken.

**Differentiating companies within a Business Solution from a more sustainability-orientated perspective**

When considering the Business Solution of “Access to Telecoms”, one way to differentiate companies is to assess telecom infrastructure needs across countries by using a variety of global sustainable development indicators which include mobile cellular subscriptions rates, Internet users and population covered by mobile cellular networks. These are combined and aggregated to give a rank and score for each country in terms of telecom infrastructure needs – the sustainability challenge. Company’s exposures to countries according to their telecom infrastructure needs are then defined to give a sustainability-orientated outlook for each company.

**Differentiating companies within a Business Solution from a more financially-orientated perspective**

At a basic level, each country is then assessed with regard to its future average economic growth rate. This can be done by simply assessing the 2010-2015 GDP CAGRe for each country. After, company sales-weighted exposure to country GDP growth rates are then assigned to give a more financial-orientated outlook for each company. Grouped company selections are calculated using an equally-weighted arithmetic average.

The results of both of these assessments can then be combined to give an indication of how exposed a company is to the “Access to Telecoms” business solution.

**How is the ICT sector exposed to the “Access to Telecoms” demographic business solution?**

![Graph](image)

Source: Bank of America Merrill Lynch and Dexia AM, 2011

*Companies on the top left hand side of the graph should benefit from higher growth opportunities, consistent with where demand for telecom infrastructure needs is greater.*

As can be seen in the graph above, telecom companies which fall within the MSCI World are not sufficiently exposed to countries with high infrastructure needs. The converse is true for non-MSCI World companies which were selected for their positive exposure to fulfilling “Access to Telecom” needs.
4.2. Different business solutions present varying levels of opportunity

From our demographic stock selection and the identification of a basket of stocks which respond to each business solution, further simulations can be made to determine which business solutions currently offer better growth profiles and subsequently opportunities. Grouped company business solutions selections of MSCI World stocks and small- and mid-cap and emerging market companies have been calculated using an equally-weighted arithmetic average. These aggregated results for demographic business solutions have been summarised below.

Growth Profiles of the Demographic Company Selection
Current EV/EBITDA and EBITDA CAGR 2011-2013e of selected companies in demographic business solution themes

The challenges posed by demographic change will inevitably drive the demand for, and the growth of, all the business solutions in the medium- to long-term. But as seen in the graph above, in the short-term these business solutions all demonstrate different growth potentials and as a result, different valuations. A number of interesting conclusions can be drawn:

- **Growth potential of the selected demography business solutions is higher than that of the MSCI World.** This confirms our belief that opportunities within these solutions are tangible and well-founded. Products and services such as telecoms which serve BOP markets have been on companies radar screens for some time and a multitude of innovative solutions have been developed to cater for these needs; this explains why growth expectations for telecoms is weaker compared to other identified business solutions;

- **Demography trends are long-term plays for which we would pay more to be exposed to them but a number of opportunities still remain.** Generally, higher growth potentials are correlated with higher valuations. This indicates that the market has already taken opportunities offered by stocks into account. We have a strong conviction that demography trends, challenges and related business solution themes are long-term plays for which we would pay more to be exposed to them. However, there are also some cases, such as the “Management of Resources” business solution thematic, which present comparatively low valuations with a higher growth potential.
5. Conclusion

Understanding demography-related trends, subsequent challenges and offered solutions is a complicated affair. While the subject of demography immediately conjures up images about people and populations, it has to be remembered that there are a multitude of knock-on effects that affect other aspects such as environmental and resource degradation as well as resource scarcity. A sound understanding of human health, environmental, workforce and consumer implications of both growing and ageing populations is necessary to see the sometimes intangible solutions that are available. Overall, possessing a broad and extensive understanding of demographic challenges offers significant investment opportunities available across a wide range of regions, markets and sectors, and demography investments are not just confined to the domain of “traditional” demographic issues such as the healthcare sector.

One goal of this paper has been to make a tangible link between demographic challenges and sustainable solutions to these demographic driven problems, while ensuring sound financial returns. For example, companies which offer education solutions in the midst of a potential skills shortage crisis brought about by a growing, yet unskilled labour pool, clearly offer a sustainable and financial win-win. Likewise, companies which offer more sustainable solutions to using energy resources more efficiently or which seek to increase the production of already scarce resources are also beneficial.

Thus, a thorough understanding of demographic trends offers a multitude of business opportunities and solutions for an investor. These solutions cover a wide range of markets (e.g. developed and emerging markets) and sectors from healthcare to renewable energies. In the identification and selection of companies, major growth and opportunities appear to be much more prevalent among small and medium sized companies compared to larger caps. For the most part, the market appears to integrate demographic trends into company valuations and growth prospects of companies which are well-aligned to provide business solutions. However, there are still opportunities available to invest in companies with lower valuations and promising growth potentials.

As the challenges brought by growing and ageing world populations are not going to dissipate any time in the near future, the ability to recognise different investment opportunities and to act on them will be imperative.
How do we currently integrate our understanding of demography into our Sustainability Analysis?

Our understanding of demography and related sustainability implications is readily integrated into the analysis of our **core Best-in-Class funds** across all regions and asset classes.

The ability of a company to provide solutions to demography-related challenges falls naturally within our **Macro Analysis**; this is where we seek to identify certain business models and products which positively contribute to alleviating and combating major sustainability trends such as those posed by both growing populations (the macro trend termed “Developing Economies”), and ageing populations (the macro trend termed “Demographic Evolution”). It also considers the challenges that growing populations are placing on resources and the environment (within the macro trend termed “Resource Depletion”). The importance that demography-related trends have on the analysis of companies is inherently dependent on each company’s individual product mix and sector of operation. Some company operations are highly geared towards the provision of demography-related business solutions such as education services and ageing population-focused products, while other activities such as mining are more influenced by other macro trends such as Climate Change. Thus, our Macro Analysis allows us, from a top-down approach, to identify companies whose products are well-suited to answer demographic-related challenges. The Demographic theme is well integrated in our Macro analysis as four (developing economies, demographic evolution, resource depletion and health & wellness) of our six global sustainability trends are demography-related challenges.

Our **Micro Analysis** enables us to assess, using a bottom-up approach, how individual companies are responding to demographic challenges posed by potential skills shortages in the workforce, how they are mitigating their impact on resource scarcity and environmental degradation, and how they are adapting their product portfolio to meet changing consumer needs in a sustainable way. For example, here we can assess if companies have, and to what extent, customised and developed new versions of existing products to ensure a wider uptake by consumers, primarily lower-income consumers, as well as assessing how skills shortages are being tackled at a company level.
(4) European Centre for the Development of Vocational Training (CEDEFOP).
(8) World Resources Institute, 2007, “The Next 4 Billion – market size and business strategy at the base of the pyramid”.
(10) Middle class earners are defined as those making USD 10-20 day.
(12) Bain & Company, October 2010, “Bain & Company projects 10% surge in worldwide luxury goods sales in 2010, erasing recessionary declines”.
(17) Goldman Sachs, 12 January 2011, “Identifying growth opportunities in the care home sector”.
(20) UBS, September 2010, “UBS research focus – The rush for resources challenges emerging markets”.
(21) JLJ Group, January 2010, “Wastewater Treatment Industry in China, Overview of Key Tier 2 City Markets 2010 Update”.
(22) The results exclude data from the GICS Financials Sector, as the valuation indicator used is not reflective of sector operations. As a result, the MSCI World benchmark also excludes the Financial Sectors, and the business solutions of “Affordable Finance” and “Financial Security” are also excluded.
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