

## The Global Economy towards 2050: A Paradigm Shift

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### Abstract

The contextualization of this paper is to review the changing world order on global resources and socio-cultural shifts that would augur a global economy which would grow twice its size by 2050. It is now estimated that population data would be stripped. India's economy is rivalling that of China and the US, while Fusion power is nearing commercial availability, "Energy Islands" shall remain widespread along with Deep ocean mining. The transformation in technology means virtual telepathy is dominating personal communications, while Biorepository and genomic information systems are transforming healthcare. So, would Claytronics revolutionize consumer products along with breakthroughs in carbon nanotube production? With a global population expected to reach 9 billion, Orbital Solar Power is commercially feasible. Robots shall become a common feature of homes and workplace. With the emergence of AI, personnel costs have shifted from operations, maintenance and training, to design and development. Machines can perform repairs in-flight (including the use of "self-healing" nanotechnology composites) while routine ground maintenance requires little or no human labor, being done mostly by robots. New tactics and information can simply be programmed into the aircraft, or they can "learn" from others in the swarm.

**Keywords:** Global economy; GDP; Economic growth; Resilience

### Introduction

The Anticipation of crises and the risk incurred in all terms including socialization, as we are aware that many experts knew that the global financial meltdown of 2007-2008 was meant to happen and it was anticipated by many recession prediction models. It was possible as there were various indicators and signs that strongly helped them predict it as there were indicators in the financial markets that something troubling was going on. At present one of the greatest trouble or problem encountered is that of the central banks that have hidden several market indicators/signals with eccentric/unconventional monetary policies.

John Hawksworth and Danny Chan [1] of PricewaterhouseCoopers in their report have projected that the G7 which include: the US, Japan, Germany, the UK, France, Italy and Canada, plus Australia, South Korea and Spain which are now identified as the advanced economies will be replaced with the seven largest emerging market economies, which we refer to collectively as the E7 which include: China, India, Brazil, Russia, Indonesia, Mexico and Turkey.

At a global level, the greatest uncertainty is whether any of the BRIC countries exercises the capability to project power anywhere in the world – a position of which the USA is likely to have been the sole occupant over much of this time. The answer to this will be determined primarily by their ability to re-configure their respective governmental systems to meet the public accountability demands of an increasingly wealthy population. In this regard, pseudo-democratic Russia, and autocratic China will be in the most difficult positions.

The QE's of world's major central banks have increased the level of risks of several asset classes to extreme ends of the probability distribution. Which indicates the actual price of an asset and it does not meet its market-based value; the true level of risk is not properly priced in. The stronger western economies should generally be reaping the benefits of debt reduction and more limited responsibility for the provision of services to the public. This, combined with on-going technological advances could produce a second "industrial revolution in the west", in which advanced manufacturing techniques and robotics compensate for what had hitherto been a crippling labor cost disadvantage.

Socialization of risks of the private entities with monetary or fiscal measures hides the risks behind politically motivated decision and it is greatest risk threatening the world economy, which results in mispricing of risk, of unknown and unforeseen magnitude.

As political changes are being witnessed warning has been announced by the American President Donald Trump that the United States of America would be witnessing a "massive rescission ahead".

It is also identified that the recession we are facing ahead would be worse than the crash of 2008. These are supported and backed with various indicators that states that the recession has begun last year with the global down turn. The current downturn seems to be a normal state that takes place in a matured business cycle.

### The Shift

The World's gross domestic product (GDP) is anticipated to nearly increase fourfold over the next four decades. In the year 2050 it is expected that the OECD's share of the global economy is likely to drop from 54% in 2010 to less than 32% [2].

In the meanwhile the share of Brazil, Russia, India, Indonesia, China and South Africa (BRIICS) as shown in Figure 1 is projected to grow to more than 40% and the US economy that has been the leading one in the world, in measures of GDP and based on the purchasing power parity exchange rates (PPPs), is being overtaken by China since 2012. Simultaneously, the GDP of India is projected to surpass that of the United States before 2040.

The global "engines of growth", China and India, may witness

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Source: John Hawksworth and Danny Chan (2015).

Figure 1: Breakdown of components of average annual real GDP growth (2014-2050).

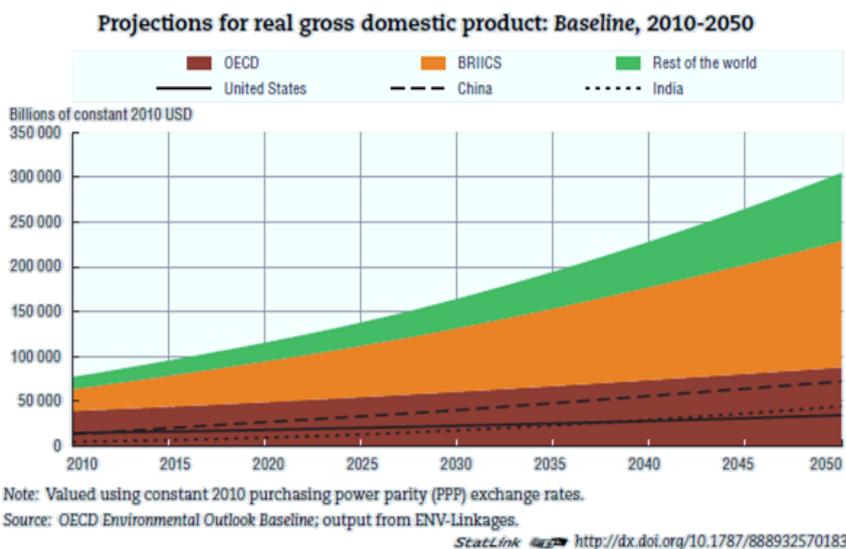


Figure 2: Projections for real gross domestic product: Baseline, 2010-2050.

their mediocre GDP growth rates slow down to 2050 as represented in Figure 2. But, shall remain above the average growth rate of the OECD region and the baseline data - projects that Africa shall experience higher economic growth rates between the time period 2030 and 2050, but unfortunately it may remain the poorest continent [3].

### The extent of urbanization

The effect of Mass Urbanization may reflect by huge number of people shifting towards urban cities globally. By the year 2050, it is believed that 2.8 billion more people than the population that exists today are projected to relocate and live urban areas; this would include nearly 70% of the world's population.

The global rural population is expected to decrease by 0.6 billion

and as a result of such urbanization there are various pros and cons, which would result in: a focused population might make it by and large to have access to easier supply of resources with modern infrastructure for energy and water setup. Similarly, the levels of exposure to air pollution will be pretty higher and this could worsen the environmental conditions in slums or ghettos, with serious concerns for human health and wellbeing.

### The environmental drivers

The various uncertainties surrounding the probability of policy options that counts in terms of political and public support, technological potential or costs shall be address sanitation through simulations of a various policy variants, key environmental challenges that include: a. climate change, b. biodiversity, c. water and health, and d. environment.

### The aging population

It is identified that there are substantial differences in the demographic developments across the regions and countries. Meanwhile by the year 2050, it is projected that the world's population would grow by another 2.2 billion people that would mostly reach just about 9.2 billion. In this state most of the growth would occur in South Asia, the Middle East and particularly in Africa. It is also anticipated that the global population profiles of all regions are ageing, especially the OECD countries and China as seen from Figure 3.

### The energy crisis

It is identified that under the Baseline scenario, the world's energy demand in year 2050 is projected to increase by more than 80% higher than demanded today. It is observed that in 2050 global (commercial) energy mix is not anticipated to differ significantly from that of today's, as the fossil fuels are still providing about 85%, the various renewable sources that include biofuels, but do not traditional biomass which contributes to providing just above 10%, and what's left provided by nuclear. But among the fossil fuels, it is still uncertain whether coal or gas would be the main source of increased energy supply. To ensure that such measures do not undermine other desirable policy outcomes, policy makers are recommended to:

- a. Identify the co-impacts of energy technologies;
- b. Quantify those co-impacts;
- c. Monetize those co-impacts where possible or prioritize them if monetization is not feasible; and
- d. Take account of the value of co-impacts in policy decisions [4].

### The need for cultivatable land

Globally, in the arena of agricultural and the land needed for cultivation is projected to expand massively in the next decade as the result to match the increasing demand for food for the ever increasing population, as a result intensifying the competition for land. The use of Agricultural land is estimated to peak before 2030 and decline timely thereafter, it would be the result of the population growth slowing

down and yield enhancements carry on. The rate of deforestation has already started to decline; this trend is estimated to continue for a period of time specifically with the demand for more agricultural land eases after 2030.

It is also important to adopt a more ambitious policy that helps measure and achieve internationally agreed policies, plans, objectives, targets and strategies. Such as the Aichi protected area that targets of 17% of the world's terrestrial and inland water areas and 10% of coastal and marine areas by the year 2020 as agreed under the Convention on Biological Diversity (CBD). This Outlook various simulations and suggest that in order to reach the 17% terrestrial target in a way that is also ecologically representative and a further 9.8 million km<sup>2</sup> of land would be needed to be protected.

### The indefensible climate change

The trend to reverse emissions in order to stabilize the Green House Gases (GHG) concentrations emitted at 450 ppm CO<sub>2</sub>e, and it is identified to increase the chance of limiting the global average temperature rise to 2°C. The ambitious mitigation action is found to substantially lower the risk of catastrophic climate change. The cost to be meant for reaching the 2°C goal would slow down the global GDP growth from 3.5% to 3.3% per year with a an average of 0.2 percentage-points, which would cost roughly around 5.5% of global GDP as on 2050. This cost should be associated and compared with the potential cost of inaction or delay; this could go as high as 14% of average of the world consumption per capita according to some estimates.

Delaying action is costly and such Delay can moderate action up to 2020 as implementing the Copenhagen/Cancún pledges only that focuses on waiting for better technologies to come on a single stream. This would increase the pace and the scale of efforts needed after 2020. This is also found to lead 50% higher costs in 2050 compared to the various timely actions, and it may also potentially entail higher environmental risk as visible.

A cautious and practical response to climate change raises the need for both an ambitious mitigation policy that may help reduce further climate change. Certain timely adaptation policies that are to

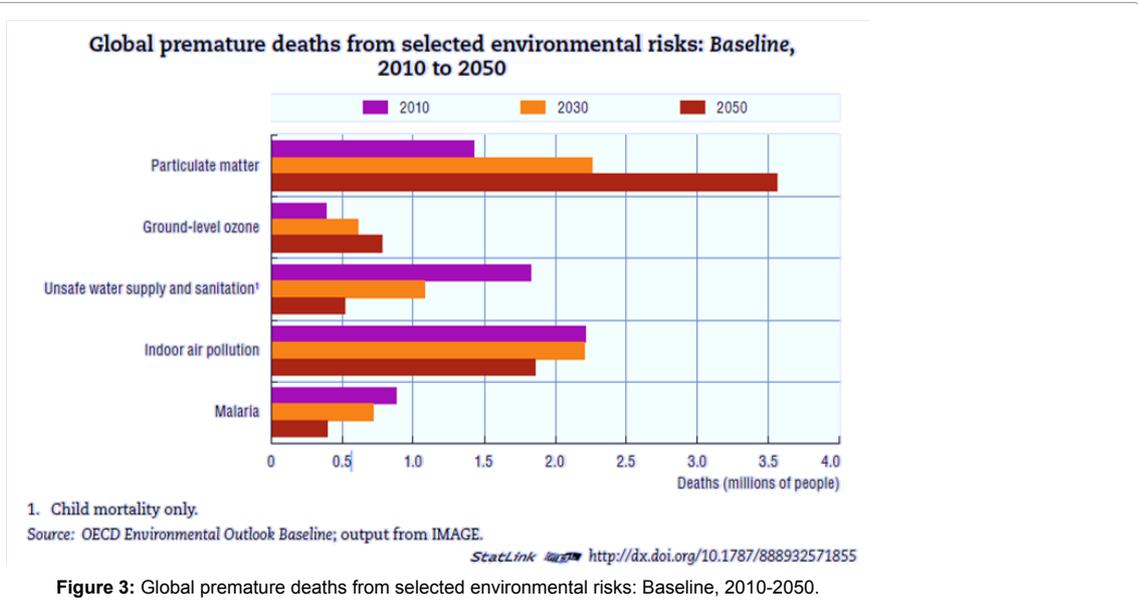


Figure 3: Global premature deaths from selected environmental risks: Baseline, 2010-2050.

limit damage from the impacts those are previously inevitable. With reference to this context of controlled government budgets, finding the least-cost solutions and then engaging the private sector will be critical to finance the transition or changeover. Expensive and costly overlaps among policies have to be avoided. The following actions are a priority: a. Adapt to inevitable climate change; b. Integrate adaptation into development co-operation; c. Set clear, credible, more stringent and economy-wide GHG-mitigation targets to guide policy and investment decisions; d. Put a price on carbon. Countries were to be implemented as a carbon tax or a cap-and-trade scheme with fully auctioned permits, in 2020 the fiscal revenues would amount to more than USD 250 billion, i.e. 0.6% of their GDP; e. Reform fossil fuel support policies; f. Foster innovation and support new clean technologies; and g. Complement carbon pricing with well-designed regulations.

### The challenge of water

When it comes to creating incentives for water efficiency the following aspect are to be considered, such as (OECD, 2012):

The pricing of water has to be improved to signal scarcity and to create incentives for efficient water use in all sectors namely- agriculture, industry, and domestic services; address social consequences through well-designed tariff structures or targeted measures. Combine multiple policy instruments to curb water demand and make alternative water sources that include reusing treated wastewater competitive which are represented in Figure 4.

- a. Implement flexible water allocation mechanisms which are to be done by combining water rights reform and pricing policies.
- b. Improve water quality
- c. Better co-ordinate the expansion of wastewater collection (sewerage systems) with wastewater treatment to avoid wastewater being discharged untreated. Innovative techniques and business models will be needed; the private sector is an important player.

- d. Improve and increase the use of appropriate wastewater treatment equipment and techniques, and the efficient management of nutrients and agricultural run-off. Encourage further R&D to speed up and disseminate innovation in developed and developing countries. Build capacity in target economies (essentially farmers), through training and education.

### Invest in green infrastructure

Investing in green infrastructure has a great need and it is mandatory to invest in innovative water storage capacities which do not conflict with other environmental policy objectives that influence the preservation of ecosystem services, forests or biodiversity's. It is also important to reduce the impact and occurrence of water-related disasters by restoring the ecosystem functions of floodplains and wetlands, paying attention to hydro morphology and removing incentives which encourage people to settle or invest in risk-prone areas. It is also important to accelerate the deployment of water supply and sanitation infrastructure in developing countries. Explore innovative options which consume less water, energy or capital. This can be funded partially by OECD member states, e.g. by increasing the portion of official aid to these areas, and the private sector can also play an essential role a can be seen in Figure 5.

### Risks not to be ignored

It raises few risks which need more attention today, which have the power and might to create a paradigm shift that could be of a destructive nature. Some of the elements with great risk are:

- a. The status of balance sheets of Central Banks, that have exhausted their tools used to control monetary policy, have to move ahead by using various tactics such as initiating "helicopter drop of money", monetize debt of sovereign states, "Helicopter money" would be also backed with the difficulty of implementation and it could be directly released to consumers' bank accounts, and a s result it would be

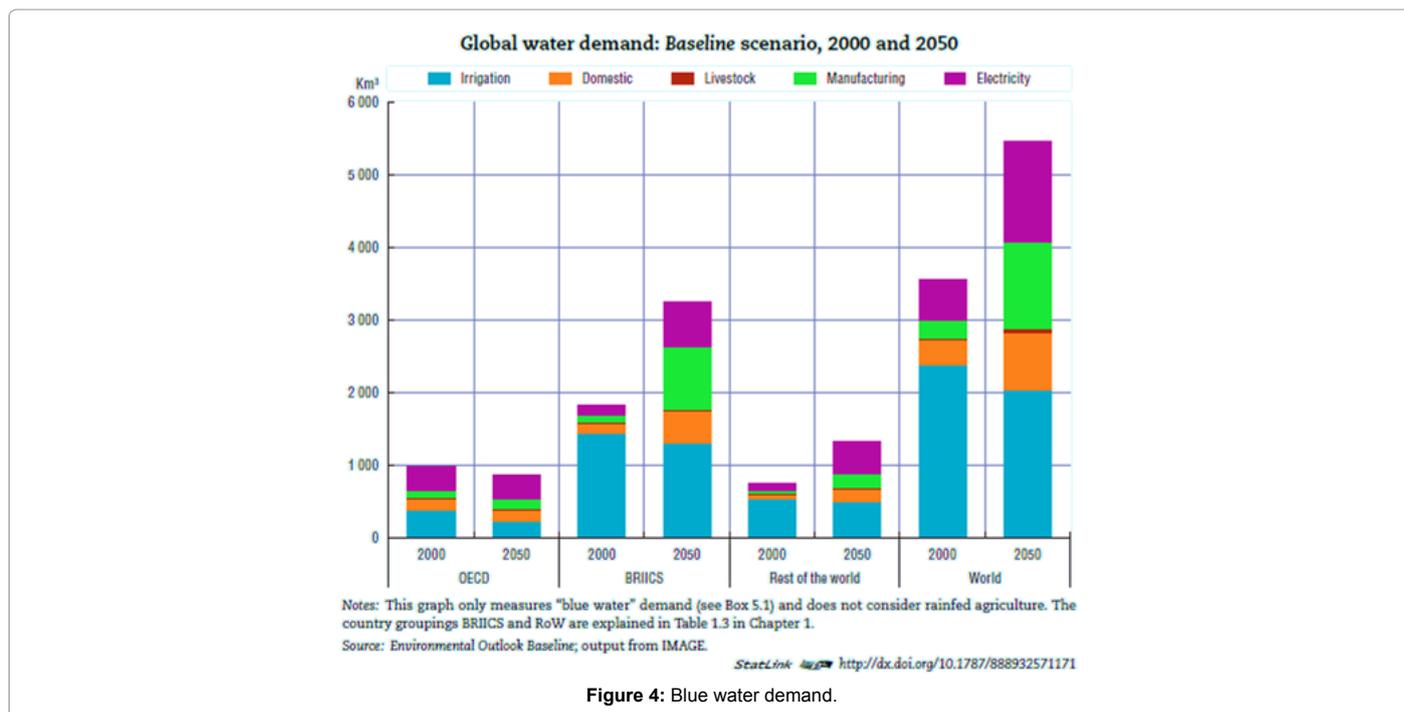


Figure 4: Blue water demand.

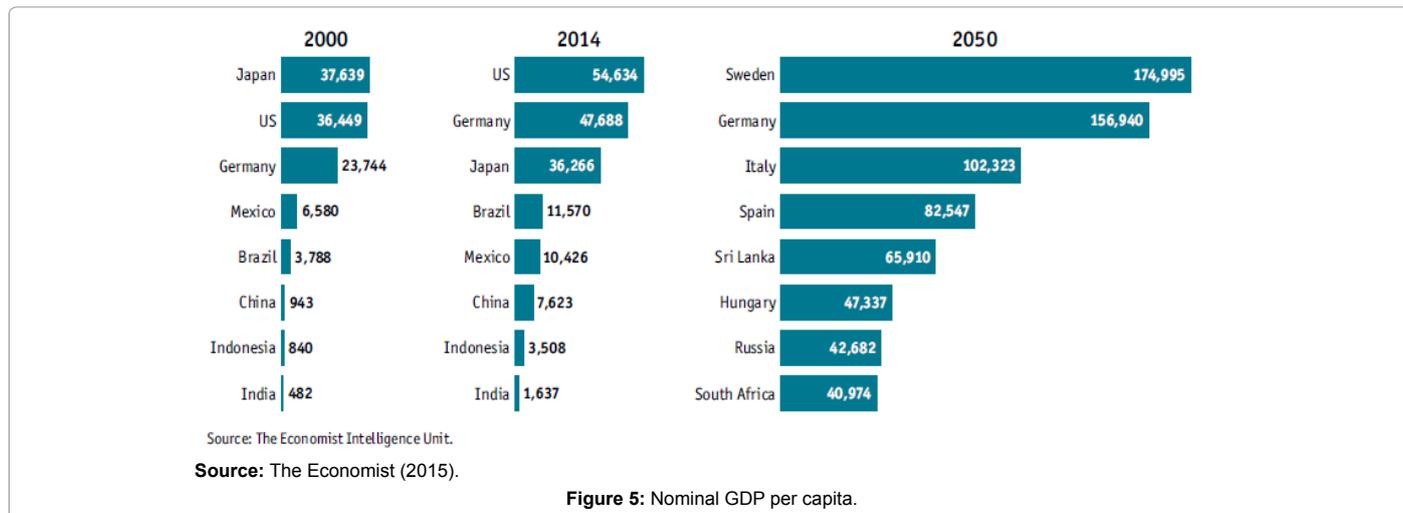


Figure 5: Nominal GDP per capita.

deficit financing of the government and shall break the independence of the central bank.

i. By 2050 the leading 'E7' emerging economies could have domestic banking assets and profits that exceed those in the G7 by around 50%.

ii. China could overtake the US in terms of the size of their domestic banking sectors by around 2023.

b. Risk for the global economy is the high level of private and public sector debt in major economies and it is based on the ability of governments to offer fiscal stimulus and as necessary they may raise the probability of private and public sector defaults.

c. The risk of black swans could, o'er, creep around the financial sector, as a result of the failure of Lehman Brothers and other financial institutions have evidently limited the desire for risk, but in Europe and especially in China there have been no such events limiting the moral hazard problem such as a situation, where someone else than a risk taker endures majority of the risks of his/her actions in the financial sector. But, it is also pretty evident that the opposite actually and as a result, several hundred financial institutions were let to nosedive in the US during and after the Great Recession.

d. The sources of risk and political instability, in Europe have been triggering an extraordinary number of overlapping crises. Here, the migration crisis has been challenging the uniformity of the European project and has a greater risk of another full-blown crisis that's evolving and building up in the Eurozone. There are several institutions that have been designated after the financial crash of 2007-2008 and during the European debt crisis that trailed later. Similarly, their effectiveness during the acute and major crisis still remains untested. Today, the European banking sector is highly exposed and vulnerable with a high proportion of non-performing loans threaten and hover its total stability. The support for Brexit, or the exit of Britain from the EU by Great Britain, remains at the peak and also does have the likelihood of Grexit or the exit of Greece from the Eurozone. Backed by the various terrorist attacks in Europe and geopolitical ambitions in Europe and in the Middle-East it has become totally unpredictable political and military developments have long-term effects on global trade.

e. The source of uncertainty has the matured commodity super-cycle, which has pushed down the prices of several commodities, like iron, copper and oil. Unless the cycle turns upwards and the prices

of these commodities start to increase, central banks shall be forced to raise the interest rates, and as a result it shall push the world economy into a deflationary recession.

Hence, where are we and the global market stirring-up to? It is regrettably evident, very certain that we are observing and fronting some form of a dip. At present it is a very mild one, but in the meanwhile if any of the above stated risks would come to reality and materialize, the decline would have the latent to transform itself into a systemic crash under present circumstances. This makes it much clearer that all organizations will currently face a highly uncertain future with fairly decent growth prospects and that we can do very little to diminish/weaken the uncertainty.

As emerging markets mature, they would become less attractive as low cost manufacturing bases but more attractive as consumer and business to business markets [B2B] markets. We project that the world economy will double in size by 2042, growing at an annual average rate of around 2.6% between 2016 and 2050.

It is also evident that the Emerging markets are estimated to grow quicker than developed economies. It would result in developing countries namely China and India which are expected to overtake the USA, Japan and Western Europe. Meanwhile other evolving markets, like Indonesia and Mexico will rank among the top ten economies with effective market exchanges rates by 2050. They may overtake economies such as Italy and Russia [5].

But when addressed in terms of income per capita the measure of individual spending, the advanced economies of today are likely to continue to dominate. Various, emerging economies namely: China, India and Indonesia are estimated to grow considerably as can be inferred from Figure 5. China is expected to catch up with Japan by 2050. India would witness its spending power to rise from representing 3% of the spending power of a US consumer to 24% by 2050. Similarly, the spending power of a Chinese consumer when compared with that of a US consumer, it shall increase from 14% in 2014 to just fewer than 50%.

The upsurge of developing economies will continue to provide new customers and opportunities to scale up/ increase rapidly. Nevertheless, despite their low growth outlook advanced economies cannot or should not be ignored, it is with reference to the higher spending power of consumers in these areas.

We will see a number of new emerging markets taking centre stage - by 2050, emerging economies such as Mexico and Indonesia are likely to be larger than the UK and France, while Pakistan and Egypt could overtake Italy and Canada (on a PPP basis). In terms of growth, Vietnam, India and Bangladesh could be the fastest growing economies over the period to 2050, averaging growth of around 5% a year.

## Conclusion

On a mainstream it is important to integrate biodiversity conservation and ensure it is important to see that sustainable solutions are used in main policy areas namely: Economic affairs, agriculture, fisheries, forestry, land-use and urban planning, development cooperation, climate change, national accounting and R&D, and it also may help enhance synergies and prevent trade-offs.

A mitigation strategy involving heavy reliance on bioenergy could require an expansion of agricultural land, reducing the net benefits to biodiversity. Conversely, the financial mechanism for Reducing Emissions from Deforestation and forest Degradation (REDD) in developing countries could also have benefits for biodiversity.

Remove and reform environmentally harmful subsidies, including those that promote, without any environmental considerations, the intensification or geographic expansion of economic sectors such as agriculture, bioenergy, fishing, forestry and transport. Subsidy reform can also increase economic efficiency and reduce the fiscal pressures confronting governments.

Scale up private-sector engagement in biodiversity conservation and sustainable use, including through innovative financing mechanisms at the local, national and international level. Clear price signals for natural resource use and pollution are needed that provide certainty yet offer the private sector flexibility in determining how they can most cost-effectively reduce their impacts on ecosystems.

Global financial markets will now be heavily driven by environmental and natural issues. Liquid, internationally regulated markets should now be in place to facilitate trading and risk management, but there success will depend upon far higher degrees of collaboration between governments and private investors than has ever been the case before.

The scenarios combine what we can forecast for 2050 with an exploration of some of the uncertainties.

The two “big” questions that we pose with the scenarios are:

- Will our economy and society be similar to now, - i.e. the Washington consensus or will there be a new paradigm based on community (with or of interest or of geography?)
- The cost of defense and border controls has led to these becoming regional concerns. Nation states have reduced capability to provide services for their citizens, leading to lack of a safety net and severe inequalities in health and education.
- Immigration is essential to help regions with ageing populations – China, Japan, Europe, US - cope with this. Africa, India and Latin America have young populations but the successful of these economies will need all their people – though they may travel for gap years or to get extra language skills.

As stated by UNCTAD [6], the national policies can help considerably. With effective regional and multilateral support it would be possible to ensure governments have effective fiscal revenues and policy space that they may need for actions such as designing and implementing policies that may help generate fully clad employment and shared prosperity, which would result in improving people's livelihood.

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