



Background Paper 3:

CHANGING FUTURE SOCIAL CHOICES AND FOREST CONTRIBUTIONS

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Executive Summary
Changing Futures, Choices, and Contributions of Forests

Planetary changes are occurring at such vast scales and rapid pace that their observers struggle to find the right terms and adjectives to describe

It is worth mentioning, however, that a larger, richer, more highly educated, and more environmentally aware global population creates new opportunities for environmental entrepreneurs. Tomorrow's consumers and producers, buyers and sellers, decision makers and stakeholders are likely to be even more sophisticated than those today. Their greater knowledge and stronger social connections mean that efforts to influence their consumption patterns will have to be based on more sophisticated, peer to peer, subtle strategies than have been deployed by marketers and media outlets till now. The direct regulatory and incentives based approaches that continue to hold sway today may become less effective as consumers learn about ways to respond to negative and positive incentives based levers such as rules, fines, rewards, and payments.

Climate change, gathering pace at a rate faster than the more aggressive scenarios entertained in the early reports of the Inter Governmental Panel of Climate Change (IPCC), will exacerbate the consumption impacts of a larger and richer population on forests and on the environment more generally. Higher temperatures, increasing water scarcity, and greater frequency of extreme events will adversely affect the productivity of land and water resources, particularly in the tropical world. These climate related shifts may lead to changes in the relative importance of tropical and temperate regions as centers for the production and processing of forest products. These changes will certainly intensify greatly the competition for land in the coming decades.

The need for more food, more proteins, more renewable fuels, and more fiber is occurring and will continue to occur in the same landscapes in many countries. It is already leading to a change in the ownership and control of massive areas of land – close to perhaps 100 million hectares – in developing countries, especially in Sub Saharan Africa. Despite provoking a backlash in some countries, “land grabbing” will continue if substantial changes in rights regimes, land policies, and decision makers' attitudes do not occur. The tradeoffs involved in such rights and policy regimes are directly about higher productivity and larger harvests of resources vs. higher levels of substitution of needed forest products with more sustainable alternatives or more sustainable and efficient production processes.

Scientific and technological changes—in the creation, management and sharing of information about forests and forest products, in the development of new climate resistant species, and in developing more efficient production and distribution processes including those yielding higher employment—hold great promise. But they need more research investments than are occurring in most of the world. Total public expenditures on forests (likely less than US\$ 25 billion) are higher than gross public revenues (around US\$ 15 billion) but

Governance options towards greater stakeholder consultation and involvement, broader incorporation of diverse interests in decision making, choices that include civil society, market based, and hybrid instruments rather than regulations alone, and attention to attitudinal, behavioral, and institutional interventions also present substantial promise for enhancing the efficiency and sustainability of forests and forest management. Such governance options must also cover trees outside forests, and address patch to landscape level forest areas. But research in the domain of forest governance is itself patchy, and for the most part in early phases. Far more work is necessary to identify the right mix of governance arrangements to address the incredible diversity of social, political, and biophysical configurations in which forests are embedded.

Despite challenges and obstacles associated with an uncertain future, *at least five directions for no regrets actions exist*. They will contribute to making forests more economically productive and sustainable in the face of mounting future challenges:

Investments to identify and develop more sustainable agricultural commodity supply chains and the mix of information, incentive, and institutional arrangements that will be conducive to their sustainability;

Crafting of media strategies that recognize the increasingly sophisticated nature of consumption and the greater environmental awareness of a richer class of consumers to take advantage of peer to peer social media relationships;

Changes in property and rights regimes that constrain rapid shift in land ownership and encourage

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2. KEY TRENDS AND THEIR ASSOCIATION WITH HUMAN WELFARE

Each of the three global forces mentioned above – demography, climate, and globalization – are themselves complex, comprising numerous strands and dynamics. Demography is not just about changes in numbers of people, but also about migration, shifts between rural vs. urban location of social groups, and the age and class composition of an increasing or declining population. Climate change includes both the impacts of rapid

half of that in Asia. By 2030, the rate of growth of population will decline to less than 0.7% a year from the current 1.1%. But population will continue to grow at a rapid pace in both Africa and in Middle East and North African (MENA) countries. The largest countries will be roughly the same as today with some minor changes in ranking. The table below provides a rough estimate of how different countries will be ranked in terms of population by the 2030s.

Table 1: Top ten countries by population

The growing population means that overall demand for goods will increase, including the goods that forests provide. This demand can be met either by increasing the output from forests or through substitutes for the most common goods that forests provide—timber, firewood, fodder, and non timber forest products, or both. For forests to keep up with the increasing demand, either a larger proportion of existing forests will need to be used for human needs or existing forests will need to be used more intensively and efficiently. Both of these changes require improved technologies.

What is more important and interesting than these aggregate numbers, however, are the accompanying changes in the regional distribution of population growth, variations in the growth of different segments of the population, and declines in population.

2.1.2 The changing age composition of the global population

Even as it is growing, the global population is also aging. This aging is producing two distinct effects. First, the aging population is resulting in an increase in the number of

working age individuals compared to the number of dependents. This trend is particularly salient in many emerging economies. Figures 1 and 2 below provide a rough sense of how this ratio has been changing since 1950 and how that basic pattern will continue until 2030.

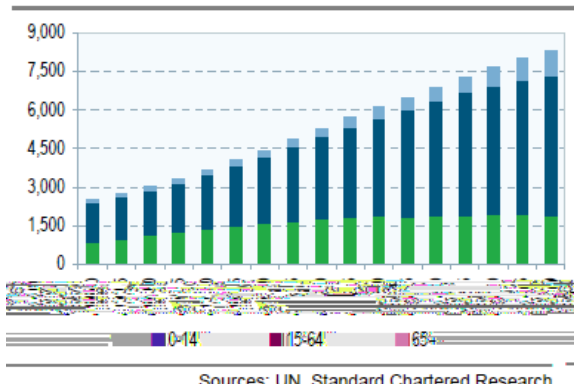


Figure1: Working age global population

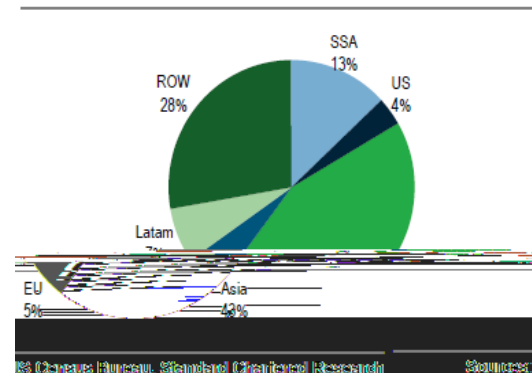
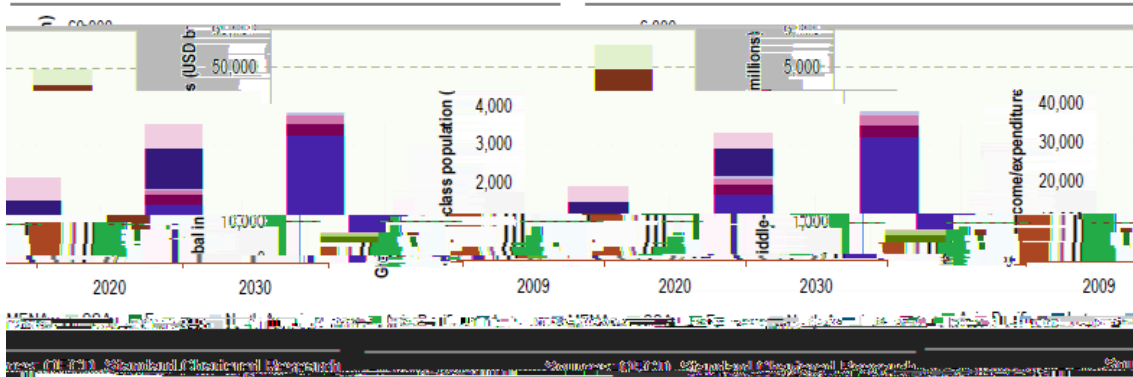


Figure2: Expected working age population in 2030

Figure 2 indicates how the working age population will be distributed regionally by 2030. The figure also represents the other effect of an aging population, mostly being felt in developed countries: the graying of the population as the number of older dependents increases. Together with the increase in the number of working age individuals, the numbers of older dependents is also increasing. The aging of the global population on the higher end is occurring at its fastest in the developed world. Life expectancy at birth is above 80 in more than 30 countries today as compared to less than 20 countries just five years ago. Thirty percent of Japan's population is older than 80 years. Although this is only true of Japan today, sixty four countries will have joined Japan by 2050 (UNFPA and Helpage International 2012: 12).

As the population ages, its growth is slowing. In a number of countries, particularly in the developed world, population growth is negative. Thus, several Eastern European and ex Soviet state countries such as Estonia, Latvia, Lithuania, Poland, Russia, and Ukraine, but also some developed world nations, such as Germany, Italy, Japan, and Portugal have seen declining populations. An aging and falling population has profound

Particularly notable is Asia's share of the middle class, which is predicted to grow from the current 28% to 66% (Standard Chartered 2012: 59).



Figures 3 and 4: Distribution of global income and expenditure and middle class population in 2030

Different researchers have recognized the middle class as being linked to economic growth and democracy (Banerjee and Duflo 2007), as being a source of entrepreneurs (Acemoglu and Zilibotti 1997), as being the basis of savings and greater human capital (Doepke and Zilibotti 2007), and as the key source of consumption (Murphy et al. 1989). In terms of

Figure 5: Shares of Global Middle Class Consumption, 2000 2050 (Kharas 2010)

influence the body compared to those that are more or less sustainably harvested (Gilg et al. 2005, Hobson 2002). At the same time, a number of civil society organizations such as Greenpeace have launched major campaigns to increase the awareness of consumers and to mobilize them against unsustainably harvested products (Fabig and Boele 1999, Sonnenfeld 2002). The links between a concern for the body and for sustainability more generally need to be better understood, as do the conditions under which consumers are willing to express their environmental attitudes in their purchasing behaviors.

Whether belonging to the middle class goes together with actions promoting to

new opportunities to redefine the use of land and ecosystems as some occupied rural areas become less populated. Most of the urban growth will occur in Asia and Africa. By 2025, there are likely to be 16 cities with a population of 10mn or more, compared with 11 now and one in 1950 (Standard and Chartered Research, 2011).

2.1.6: Implications of changing demographic patterns for forests

This section has discussed some of the most visible and high likelihood demographic changes in the coming two to three decades. An increasing population translates into increasing demand for forest and wood products. Although demand will increase globally, it will increase especially quickly in several producing countries that today witness low effective demand, particularly in Africa. The combination of increasing urbanization, a large and growing middle class, and a relatively young population mean that demand will increase relatively rapidly in Asia and Africa, which will in turn result in a change in trading patterns globally. Instead of large amounts of tropical timber being exported to North America and Europe, changes in regional demand patterns will lead to far more of tropical wood being consumed locally than is the case today, and to far more of the trade in tropical wood products having a south south orientation.

Anywhere between 1 and 2 billion people are estimated to depend on forests for some most to growing

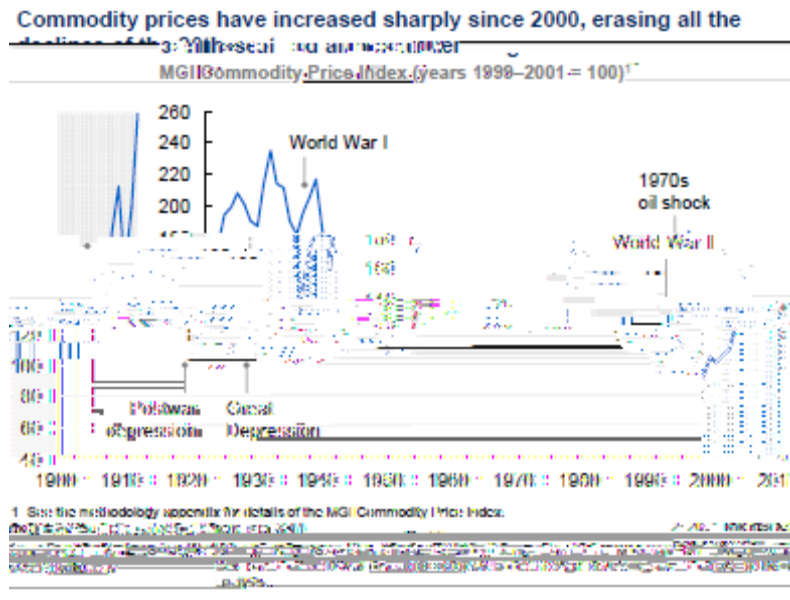
impossible in this report to cover the many different ways in which

2.3 Globalization and economic trends

It may be hard to remember if

Although prices of commodities fell for much of the 20th century, the first decade of this century has wiped out the price declines of the previous century (Figure 6). The creation of 3 billion more middle class consumers in the next two decades means that this change in the relative prices of resources is no flash in the pan but likely to endure. Further, demand for resources and raw materials is increasing at precisely a time when new supply sources are unclear and costs of extraction for many resources are rising.

Figure 6: Changes in commodity prices (1900-2010)



Source: MGI 2011: 5

If we look at this issue through the lens of forests, the major implications for forests and the people who depend on them relate to this competition for land to produce food and fuel and fiber. One set of concerns relates to limits on land and the extent to which increases in food production might be possible without deforestation. A number of researchers have highlighted possible scarcities of land as a result of increasing demands (Lambin and Meyfroidt 2011).

We can also expect that this will lead to more conflicts over land as the large literature on land grabs already makes very clear (Cotula et al. 2009, Von Braun and Meinzen Dick 2011, World Bank 2010). With reports of changing control over land from countries such as Papua New Guinea, Russia, Colombia, and a range of other countries

in sub Saharan Africa, Southeast Asia, and Latin America, it is evident that the phenomenon is global, and that the term “global land grab” is at least descriptively accurate even if normatively contestable. The effects of change in land ownership and control on such a massive scale will be felt for decades and will inevitably mean a tremendous change in land cover on the areas in question.

2.3.3 Changing consumption and production patterns

Although the discussion above has focused mainly on the consumption effects of demographic trends in the next twenty to forty years, production patterns are also going to register major shifts over this time period. These shifts will occur along spatial and social axes, but also have important qualitative and quantitative dimensions that are important to appreciate.

The last 15-20 years have seen huge changes in wood processing capacity with growth, being particularly rapid in China, Brazil, Vietnam, and Russia (see table 2 below). China and Vietnam have relied on imports of forest products from the world

Table 2: Changing share of selected countries in exports and international trade of wood products (from Nilsson 2007).

		Exports (USD million)		Trade (%)	
Country	Share (%)	2000	2007	2000	2007
Emerging Players					
Brazil	2.2	1,604	8,151	0.8	1.4
China	0.1	1,010	3,528	0.5	1.5
India	0.3	1,940	10,455	1.5	7.2
Indonesia	3.2	3,530	8,174	2.9	3.8
Malaysia	2.1	2,286	6,007	2.0	2.8
Russia	3.0	1,715	7,633	1.3	2.6
Vietnam	0.6	144	1,612	0.1	0.2
Traditional Players					
Canada	13.8	18,375	35,408	15.2	15.2
Finland	5.0	9,724	12,912	8.1	8.1

Source: STCP (2007).

Another possibility, presented by Sten Nilsson (2007) is that competition for land in Southern countries will intensify and it is doubtful that the forest sector in the South will remain competitive with food and energy. Forest industry will then shift back to Northern countries. This conclusion, however, depends on whether a changing climate will permit expansion of cropland in the developing world. Indeed, the combination of a number of factors make it more likely that it will be crop production rather than tree production that will increase in temperate climates. In general, agricultural productivity in terms of output per unit area in most developing countries (with the clear exception of China) is much lower than in temperate countries (Agrawal Forthcoming). We also know that the adverse effects of climate change will be greater in the tropical than in the temperate world, particularly in the next two to three decades and even in the longer run (IPCC 2007). Finally, crop production is more profitable than forestry implying that temperate countries that have a land frontier (e.g. Canada and Russia) with surplus land that becomes suitable for agriculture with climate change will likely emphasize crops over forests if they have a choice. These considerations suggest that in fact the conventional wisdom about shift of timber production towards emerging economies

might be right, *pace* Nilsson.

2.3.4 Infrastructure development

One of the most consequential areas of change for forests is the scale at which new investment is likely to take place in infrastructure development in what is today viewed as the global South, particularly the contiguous tropical forest countries of the Amazon and the Congo Basins and in Southeast Asia. The numbers associated with investments over the next two to three decades – in the many trillions of dollars – are staggering.

For example, needed and planned infrastructure investments in Asia alone are expected to be upwards of 10 trillion dollars over the next decade (Standard and Chartered 2010: 10). Although these investments will occur in both the South and the North, the levels of investment in the South are more significant. Such developments, particularly in combination with large scale changes in land ownership, can have positive or negative consequences on local economies and jobs depending on how they decade

Europe and North America. Even if th3ao

diversity of life that combine to

as concessions, setting the terms on which concessions are managed, and configuring the larger policy and institutional environment within which forest governance is one piece. But change is being driven by markets and competition among private sector actors. And their goal is to seek the most favorable opportunities to generate forest products demanded in the market, and to put land on which forests are located to its most profitable uses to meet the exploding demand for commodities (Chomitz 2007, see also above).

In this context, it is important to note that a small number of agricultural commodities—soy, palm oil, cattle and cocoa—account for a large percentage of deforestation in tropical regions that have high deforestation. Rapid expansion in output has been driven by private investment, with both large companies and small farmers involved in these industries (often through a combination of out grower, cooperative, concession and supplier arrangements). Further growth in output is forecast. For example, the area under oil palm is expected to increase from 12m hectares currently to 18m ha by 2020 and 24m ha by 2050 (ProForest 2011). Mining and infrastructure also have a considerable impact on deforestation.

The importance of the private sector in the expansion of commodity production is evident. The experience of oil palm in Indonesia and Malaysia is a good example. Rapid expansion in the area under cultivation is taking place in both countries to meet population growth, changing dietary preferences, and demand for biofuels. The two countries dominate production with nearly 8 million ha of land under oil palm between them producing just about 40 million tons (Thailand, the next largest producer accounts for only 1.3 million tons in comparison) (FAOStat 2012, accessed November 2012). Much of the growth in the area under oil palm (five million hectares in the last two decades) has come from deforestation (Newton et al. 2013). But shortage of suitable new land in Malaysia and the moratorium on forest clearance in Indonesia, plus rising costs in both countries is forcing investors to seek new lands for commodity agriculture. Africa is the next frontier. Recent concession agreements include such companies as Sime Darby (Liberia 220,000 ha; Cameroon, 300,000 ha), Olam (Gabon, 300,000 ha); Equatorial Palm

Oil (Liberia, 169,000 ha) and Wilmar (Ghana, more than 100,000 ha) (ProForest 2011).

The power of the market and consumer preferences has been used in the forest sector for the last 20 years through non state regulation in the form of certification – and more recently in the form of legality verification through FLEGT, the Lacey Act, and other measures to promote better environmental and social outcomes. Certification does not involve governments as much as legality verification does (see Background Paper 1). The same market power is now being applied to the production and trade of some agricultural commodities, including oil palm, soy, and to a lesser extent meat and leather. The forest industry and the agricultural commodity industries are certainly very different, however, and it remains to be seen how effectively a combination of demand and supply side measures can influence agricultural commodities and their impacts on forests. The Forest!Footprint Disclosure Project, modeled along the lines of the Carbon Disclosure Project (CDP) and recently joining the CDP, attempts to provide investors with information on whether companies may be sourcing products from high deforestation areas. Such voluntary information provision to investors by companies is another example of efforts to use the power of markets and consumer choice to move lyfrom commodities the The

Markets are also driving change in production and processing standards in the direction of consumer preferences. Some of the biggest consumer goods companies are voluntarily adopting mandatory requirements for sustainable production and responsible sourcing in a range of forest risk commodities, such as palm oil, soya, beef and cocoa. Unilever, the world's largest buyer of palm oil, has committed to the sustainable sourcing of half of its raw materials by 2015 and 100% by 2020" (Unilever, 2013). Nestle has committed to ensuring that all its raw materials sourced in forest areas have not led to deforestation (Nestle 2011). Grupo Andre Maggi has committed to the sustainable production principles embodied in the Roundtable on Responsible Soya (RTRS) (Mongabay 2011). The Consumer Goods Forum, which represents companies with annual revenues worth US\$3 trillion, has pledged to help achieve zero net deforestation by 2020 (Consumer Goods Forum 2010).

But these commitments will require companies to adopt some of the practices and mechanisms that have been used in certification of timber (Lawson 2010), particularly in ensuring that the different stages of processing of a commodity are indeed sustainable. Barcoding, isotope tracking, and DNA evidence may all be used to manage sustainable supply chains. Some of these approaches have also been used in ensuring food quality and for health interventions, but that experience can as well be adapted in the context of agricultural commodities to track them back to their source and thereby to encourage more socially and environmentally acceptable practices.

3.2.2 Multiple actors and instruments

NGOs and various civil society actors have been instrumental in providing evidence of unsustainable land use and forest management practices and in helping develop new standards. Their actions have assisted on both the demand and the supply side aspects of sustainable commodity production. It is necessary to both influence and shift commodity investments leading to deforestation, and to encourage new investments in sustainable practices that at publicies

policies, private sector responsible sourcing policies, consumer awareness campaigns); b) supply chains and business to business links (private sector responsible sourcing policies, certification systems); and c) greater accountability and transparency (monitoring and reporting of commitments for sustainable sourcing and production, sharing of information on best practice). Such measures, particularly public procurement and corresponding private sector practices, offer an effective way to leverage sustainability practices on the ground. Experience with timber procurement offers important lessons. Eleven EU governments now have public procurement policies that require "legal and sustainable" timber or variants thereof (European Commission, 2012). Many private sector buyers, as discussed above, are also beginning to observe similar standards – critical for a steady transformation in the market for timber.

Ultimately, a single country by itself only has a small influence on markets for agricultural commodities. But countries acting in concert can have transformative influence. For example, the UK only consumes about 1% of palm oil traded internationally. However, EU accounts for 22%, offering much greater scope to influence production sourcing in the market. The big question here, as also discussed earlier, is whether companies and consumers in emerging markets will also have the willingness to translate their purchasing power into incentives that prompt sustainable practices for producing commodity and forest goods.

Demand side measures are, of course, inadequate on their own. A combination of demand and supply side measures is needed, including financial incentives. Some of the key supply side measures include a) subsidies and incentives (technical assistance, grants, and capital to support sustainable investments); b) support for compliance with standards and improved practices including technical and financial assistance to meet sustainable production standards); c) coherent and clear regulation and an enabling policy environment; d) clear land tenure and rules defining land use.

A concrete example will make the above point more clear. In the Indonesian case, the key question is how to put into place policies that simultaneously recognize the economic benefits of producing palm oil for the market but encourage plantations

and production strategies that are based on degraded rather than new forest areas. For companies the incentive is to clear primary forests as they get benefits of timber sales, and the government provides a clearer tenure right than can communities. So, placing plantations on degraded or secondary forest areas will require clarification of property and tenure, strategic development and placement of road and power infrastructure in degraded land areas, research support on the practices that enhance production on degraded forest lands, and a simplified and predictable regulatory framework. These developments depend on politics, governance, and supply side interventions. But additional demand side support in terms of information to consumers and buyers about the sourcing of commodities, consumer awareness campaigns about the difference between no deforestation and sustainably produced commodities, and public and sustainable procurement policies will serve as additional measures to encourage a shift to degraded forest land based palm oil production.

3.3 Moving beyond GDP indicators: Natural capital and sustainability practices

The Gross Domestic Product (GDP) and Per Capita Income (PCI) have long been the standard measures of progress, development, and improvement. Although disputed by some, often considered to be on the fringes of the project of economic development if not on the fringe entirely, these concepts and associated metrics have held sway for a remarkably long time, with some promising revisions through the concept of the human development index in the early 1990s.

The search for new indicators that may substitute for the GDP and PCI reflects the fact that economic growth as measured by the gross domestic product has not delivered greater well being to truly massive numbers of people. Increases in average incomes have also not improved the stock of real, sustainable wealth for posterity, for our children and grandchildren. And growth has left nature impoverished owing to high levels of consumption and waste without necessarily increasing happiness.

This is not the place to launch or summarize a critique of GDP as a measure of development but it is still worth making a few points. Calculations of GDP do not

distinguish between different kinds of spending. If GDP alone were the measure of development, the BP oil spill in the Gulf of Mexico would be viewed as contributing to the economy “positively” because it led to expenditures on cleanup of the spill and these expenditures became a part of the GDP. Nor does GDP take into account the distribution of growth. It doesn’t tell whether the aggregate levels of growth have benefitted a few or have been widely shared. It doesn’t account for depletion of natural capital and ecosystem services. The harvesting of all the trees in the world’s forests and the capture and sale of all the fish in the oceans will boost global GDP even if the result was the destruction of terrestrial biodiversity and fisheries subsequently. Nor does GDP reflect valuable goods and services that are not exchanged in the market but are critically important for society, such as volunteer work or parenting.

Therefore, there is growing interest among researchers, in a number of countries, at the World Bank, in many private sector organizations (e.g. Nestle), and in civil society organizations (e.g. Conservation International) in natural capital accounting. Ten African countries signed the Gaborone Declaration committing themselves to value natural capital in their pursuit of sustainable development (CI 2012). The subject was also discussed in the Rio+20 meetings, and there was a side event on natural capital accounting that several heads of state and CEOs attended. But the references to this issue in the in the draft communiqué suggest that there is no broad agreement on how to proceed: “We recognize the need for broader measures of progress to complement GDP in order to better inform policy decisions, and in this regard, we request the UN Statistical Commission in consultation with relevant UN System entities and other relevant organizations to launch a programme of work in this area building on existing initiatives.” The development and widespread adoption of alternative indicators of wealth is necessary to account for environmental values more effectively. It presents an important emerging opportunity for more sustainable forest management.

3.4 Forests and livelihoods

It is difficult to summarize the implications for rural livelihoods of changes that affect

forests, in part because the impacts of forest conversion on livelihoods range from wholly

Indeed, one of the central implications of the ways in which forest transitions are occurring across different countries is the need to manage the non forest. Because trees are in many different parts of the landscape and not just in forests and because the extent of trees outside forests varies depending on the stage of the forest transition (see figure below),

may often be illusory depending on the capacity of the state and the ability and the interest in government agencies to craft effective policies and enforce the policies that exist. Further along the transition curve, under increasingly intensive agroforestry and

deliver higher levels of goods and services than they do at present. The Global Partnership on Forest and Landscape Restoration (2012) estimates that nearly 2 billion hectares of land – half the official areas of forests worldwide – offers potential for restoration. Increasingly such areas will be where most forests and people are located, and their improved management is essential.

Land use plans can be best translated into action on the ground most easily in authoritarian systems in which governments have the power to enforce their will. Land use planning

weight to the criteria of maintaining soil fertility and managing land, forests, and water sustainably. Finally, the new environment strategy also calls for an expansion of

intensive silviculture and harvesting practices that will be needed will also require political action and policy changes to modify existing European framework conditions for wood supply. The extraction of residues and stumps is likely to negatively affect nutrient flows, soil carbon, and possibly water retention and biodiversity. These interrelated effects of a single decision to enhance the role of forests in one dimension – meet more energy needs – shows the complexity of tasks ahead (see also Slee 2009).

On the other hand, if forests were managed with a greater priority on biodiversity through setting more forests land aside, the supply of wood from European forests may decline by more than 10% compared to the Reference scenario. It would mean either that the shortfall is met through imports, by reduced consumption of products and energy, through the use of substitutes for wood products, and/or by intensified use of wood from other sources such as urban and highway trees and wood originating from conservation management. The challenges posed by climate change, energy and biodiversity issues are clearly complex and require long term thinking in the first instance. They will ultimately need profound policy and behavioral shifts to be resolved satisfactorily.

Even in European countries, with long established institutions and practices relating to forests, making such decisions depends on a degree of sophistication that has not been seen before. Although there is no single policy instrument for dealing with the challenges posed by climate change, there are examples of multiple actions and experiments, as for example have occurred in Brazil over the past decade or so. Appendix 1 summarizes some of the key policy approaches to dealing with trade offs related to forests and deforestation.

The rethinking of forests and their contribution to rural development requires a vision that recognizes the full range of goods and services that forests provide, and policy instruments that take all these values into account. It requires institutions and policies that reward forest owners for the ecosystem services they provide (Slee 2009, FAO 2012, Innes 2012).

In this

500 million in palm oil in the Brazilian Amazon. Vale is under some pressure to reduce its emissions and wants to produce biodiesel from palm oil. But what is notable is that it will focus its investments in forestlands that are already 'degraded' and will not follow the route of palm oil developers elsewhere of targeting existing natural forests first (Pearson 2012). Brazil has a favorable policy environment for this move and Vale has a reputation it doesn't want to lose. This presents an example of forest positive development. To the extent that markets for these commodities are integrated and that the ability to monitor and learn is rapid, stories such as this may spread to have quick results in Brazil and beyond.

4.4 Managing the non forest

When it comes to the future of forests, the need to be clear about what forests *are* assumes greater importance than it has in the past, notwithstanding the complexity and difficulty of attempting to define forests.

depends

Sustainability of wood supply: Measure in better detail the relations between net and gross annual increment, fellings and removals, including consideration of natural and harvesting losses, and assess wood supply from outside the forest, to provide an accurate basis for calculating sustainable levels of wood supply.

Drivers of wood supply: Assess the roles of price elasticity of supply, cost structures of forest management practices (silviculture, harvesting, transport), management priorities and behavior of forest owners, and non forest related sources of income for land owners;

Short rotation coppice and rural land use: Determine how much land is realistically available for short rotation coppice and where possible take account of competing land uses and policy priorities.

Non forest wood supply: examine the potential and constraints for supply of wood from outside the forest, notably landscape care wood and post consumer wood.

Wood for energy: Develop scenarios for demand and supply of wood energy, demand drivers including sensitivity to price and policy changes, and supply constraints, taking account of gross differences in national Non and

communicate

platforms and their ability to deliver successful outcomes. Finally, if information is to serve a coordination function, such as the organization of monitoring, evaluation and peer review as mutual learning processes, there is a need for overall direction. Even if this direction is in the form of flexible guidelines with ample scope for national and local interpretation, general goals will need to be negotiated and agreed.

5. CONCLUSIONS AND RECOMMENDATIONS

One way to think about potential recommendations flowing from the discussion in this paper on future trends and their implications for forests is to consider them in the light of what kinds of outcomes are likely to coincide with a sustainable, prosperous future and the steps that will take decision makers, stakeholders, and different forest constituencies closer to those outcomes.

As noted earlier, the greatest drivers of deforestation today and in the near term future are the expansion of agricultural commodity production and the occurrence of this expansion in forested areas. This expansion simultaneously threatens forests and the poor that depend on forests. But it also fuels increased output of saleable commodities, higher revenues for both the private sector and for governments through taxes, and potential employment opportunities in the agricultural as well as processing sectors. The major concern for decision makers is how to manage the tradeoffs between provisioning and other ecosystem services that this expansion represents.

Although substantial new research is outlining and highlighting the risks of agricultural commodity expansion on forests, it is also critically important to address these risks. The rapid expansion of agribusiness and the continuing criticality of forest livelihoods in the lives of hundreds of millions of poor, local and indigenous peoples are often at odds, and technological, policy, and governance interventions that can reduce the impacts of agribusiness expansion merit far more attention than has been the case until now. Although current research has begun to map spatially the distribution of new areas under soy, beef, cocoa, and oil palm, it is also equally necessary to map the different information, incentives, and institutions based interventions that have already

A substantial body of research has also highlighted the importance of effective enforcement for improved forest outcomes. Lack of effective enforcement is a major gap in the way forests are managed in a very large number of tropical countries, with substantial areas of forest and large forest revenues lost to nations because of illegal forest harvests and forest product extraction. It is critically necessary to identify public policies and private business standards that can address trade in illegal timber and other commodities from illegal forest practices.

These recommendations related to sustainable supply chains, governance and market reforms, and learning platforms translate into five no regrets actions for governments and other decision makers. Advancing on these fronts is part of a forward looking strategy to secure the economic gains forests provide, the distribute them equitably and through participatory channels, and to take advantage of new opportunities afforded by changes in the global distribution of population, consumption even in a context characterized by climate change impacts. These actions include

1. Investments to identify and develop more sustainable agricultural commodity supply chains and the mix of information, incentive, and institutional arrangements that will be conducive to their sustainability. The global expansion of agricultural commodity production is a large and growing phenomenon, and ensuring that it occurs sustainably is one of the greatest prerequisites for enhanced economic gains in countries

- apprehension are quickly becoming outdated. More sophisticated strategies that engage these social actors will substantially enhance the sustainability and economic contributions of forests into the future.
3. Changes in property and rights regimes that constrain rapid shift in land ownership and encourage broader public comment and involvement in large scale land transfers, infrastructure development, and extractive activities. With the rising demand for agricultural goods, nearly a hundred million hectares of land have changed hands in the last decade, with attendant implications for poor and marginal groups whose interests will need to be safeguarded in the face of large scale extractive and agricultural development activities.
 4. Scaling up of support for research on the production and distribution of forest products, creation of employment intensive processing methods, and development of climate resilient tree species and forest restoration. The level of investments in enhancing the productivity of the forest estate is woefully inadequate and higher levels of investments will be necessary to identify and enhance productive opportunities in the future.
 5. Deployment of hybrid governance approaches for forests from patch to landscape scale, and attention to attitudinal, behavioral, and institutional dimensions of forest management. As an increasing number of decision makers comes to play a role in shaping resource use and management strategies, the role of multi party governance arrangements in shaping the future of forests is also becoming clearer. The expansion of stakeholders and their interests demands a greater attention to the need for governing the complex social landscape in which forest and management are situated.

The above recommendations are no more than just a part of the sustainable, livable future for which societies and political decision makers may wish. But despite their incompleteness, they are a way of spelling out and specifying the tradeoffs between the goals of higher forest cover and greater prosperity. Indeed, they are a recognition that

beginning to tackle these tradeoffs does not necessarily lead to platitudes about synergies and happy people.

In the long run, the goals of environmental sustainability and development with poverty reduction are not and cannot be opposed to each other. The absence of one ultimately presage doom for the other. Thus a balance between the

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- Tenure reforms, including expansion of protected areas, removal of the motive to clear forest for speculation by reservation of previously 'undesigned' public land, and voluntary registration of properties whose owners are dedicated to good land stewardship;
- A commitment by Brazilian traders to boycott soya grown in recently deforested areas;
- A similar commitment by the beef industry (though at an earlier stage of implementation, with evidence of widespread breeches – farms are geo referenced but the cattle within them are not);
- A vigorous and professional civil society, former members of which now hold positions of influence in government.
- A national REDD+ policy and a program for the payment of environmental

- *Private Nature Reserves:* Brazil offers private land owners the opportunity to avoid paying property taxes by turning their land into a private nature reserve.
- *Mitigation Banking:* The Forest Code requires anyone owning rural land to set aside some of it in a Legal Reserve. Landowners can reach their quota by setting aside their own land or by purchasing tradable certificates from other landowners within the same micro