A Guidebook for IUCN's Thematic Programme Area on Greening the World Economy (TPA5)

This guide is intended to offer an overview of available literature relating to the main topics covered by IUCN's Thematic Programme Area on Greening the World Economy (TPA5). It is a compilation of papers, reports, and articles that can be freely accessed on the internet. It is not intended to serve as a complete bibliography of available literature, but more as an overview of the different concepts and discourses that animate ongoing discussions on the topic of the 'Green Economy'.

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Theoretical Framework

Ecological economics and environmental/resource economics are the two closely related disciplines specifically dedicated to the economic analysis of the relationship between humans and the environment. The main distinction between the two schools of thought is that the first considers the economy as a subset of a larger ecological system (e.g. Dasgupta, 2001; Daly, 2005), while the latter is more interested in attaching and adapting environmental elements to existing classical (or neo-classical) economic models (e.g. Harris, 1996). The different nuances between both schools of thought are presented in van de Bergh (2000). Another discipline which relates closely to the notion of the Green Economy is industrial ecology, which looks more closely at the relationship between human activity and the environment in the context of an industrialized society.

- ***Human Well-being and the Environment***. Dasgupta, P. 2001. Partially available on google books: http://books.google.co.uk/books?id=7FZeBX4ei4oC&dq=human+well-being+and+the+natural+environment&printsec=frontcover&source=bn&hl=en&ei=u71NS_e1DKHmnAOoo9W7DQ&sa=X&oi=book_result&ct=result&resnum=4&ved=0CBoQ6AEwAw#v=onepage&q=&f=false

  This comprehensive book investigates the different components of wealth and the role of natural capital in defining human well-being. It examines the different ways our quality of life is dependent on the natural environment. It contains considerations on the valuation of ecosystem assets and on their integration into policy processes.

- ***Millennium Ecosystem Assessment***. 2005. Ecosystems and Human Well-Being. Synthesis Report. http://www.millenniumassessment.org/en/index.aspx

  The Millennium Ecosystem Assessment (MA) is a landmark publication which provides a comprehensive overview of the state of ecosystems and of how this relates to human well-being. This document is a summary report (100 pages!). It offers a brief 20-page summary for decision makers on ecosystem change and degradation, followed by a 75-page overview of the key issues raised in the MA, such as recent changes to the provision of ecosystem services.

- ***The Place of Nature in Economic Development***. Dasgupta working paper. 2009. http://www.sandeeonline.com/uploads/documents/publication/845_PUB_Working_Paper__38.pdf .

  This paper examines the different forms of natural capital, investigates the meaning of market externalities (common pool resources, in particular), highlights the inadequacies of GDP measurements, and presents a variety of approaches for a more robust integration of natural capital into economic development - from a poverty perspective. One of the key conclusions of the paper is that market failure is not the only cause of environmental externalities, and that institutional failures (in the widest sense and at all scales) also play an important role. The author also warns that "*we should be circumspect about market-friendly solutions to environmental problems. Externality markets are extremely thin, meaning that without a sympathetic involvement of the state, the elite would be expected to enjoy the spoils from ecological services*". The overarching message is: "*development policies that ignore our reliance on ecological capital are seriously harmful - they don't pass the mildest test for equity among contemporaries, nor among people separated by time and uncertain contingencies*".

- ***Economics in a Full World*.** Herman Daly. 2005. http://steadystate.org/wp-content/uploads/Daly_SciAmerican_FullWorldEconomics(1).pdf

  This paper focus on the challenge of avoiding 'uneconomical growth' – a task which means finding the right scale for economic activity: "*The sustainable economy must at some point stop growing, but it need not stop developing. There is no reason to limit the qualitative improvement in design of products, which can increase GDP without increasing the amount of resources used. The main idea behind sustainability is to shift the path of progress from growth, which is not sustainable, toward development, with presumably is.*" Daly states that: "*natural and man-made capital are more often complements than substitutes and that natural capital should be maintained on its own, because it has become the limiting factor*". On finance: "*in a sustainable economy* [it] *would be mainly for replacement and qualitative improvements, instead of for speculation on quantitative expansion, and would occur less often*."

- ***Environmental and Natural Resource Economics: A Contemporary Approach (second edition)***. Harris, M. 2006. http://ase.tufts.edu/gdae/publications/textbooks/env_nat_res_economics.html

  Excerpts from this textbook are freely available online, providing a solid overview of the main issues that are the focus of environmental economics. The first chapter introduces the principle concepts and notions of the discipline, integrating both a micro- as well as a macroeconomic perspective. The second chapter looks more closely at economic growth and its implications for the environment. Two additational chapters on trade and climate change are also available for download.

- ***Ecological Economics: Themes, Approaches, and Differences with Environmental Economics***. Van den Bergh. 2000. Free University, Amsterdam. http://www.tinbergen.nl/discussionpapers/00080.pdf

  This article describes the main themes of ecological economics, and then compares it to the field of environmental and resource economics. Specific themes which are dealt with in more detail include: sustainable development, the growth debate, international trade, dynamic processes, behaviour, and policy.

- ***Industrial Ecology and Material Flow Analysis – Basic Concepts, Policy Relevance, and some Case Studies.*** Stefan Bringezu, Wuppertal Institute. 2003. http://www.greenleaf-publishing.com/content/pdfs/iebring.pdf

  This brief chapter introduces the science of industrial ecology, which is presented as a means of understanding: "*the functioning of the physical basis of our societies, the interlinkages of processes and product chain webs within the 'anthroposphere' and the exchange of materials and energy with the environment*." The paper looks into the relationship between material/energy inputs and GDP in European countries, highlighting a few (but not many) examples of decoupling. However, the paper highlights a negative relationship between outputs/waste and GDP in Western Europe.

- ***Using Total Material Requirement to Reduce the Global Environmental Burden***. I. Arto, 2010. Yale Journal of Industrial Ecology. http://www3.interscience.wiley.com/cgi-bin/fulltext/122673693/PDFSTART

This article offers an example of the application of industrial ecology to the assessment of a regional economic system (the Basque country). It analyzes the total material requirement for this economy, looking at the flows that have potential environmental impacts abroad – including their related socio-economic impacts (e.g. child labour). An analysis of the flow of tin to the Basque region highlights several impacts (waste generation, soil degradation, water and air pollution, biodiversity loss, health issues, etc.) in distant countries such as China, Peru, Brazil, and Malaysia.

The concept of ***resilience*** is becoming increasingly used in both natural and social sciences. It is highly relevant to economics in general and the Green Economy concept in particular. The resilience of an economy is intimately linked to its sustainability. The concept of resilience is most appropriately used for analyzing various systems in an effort to assess its capacity to absorb shocks without resulting in a change of state. From an ecological perspective, emphasis is placed on the role of biodiversity in sustaining ecosystem functions (Hooper, 2005). In an economic perspective, it is particularly useful for analyzing vulnerability and dependence of societies on their natural resources base and the capacity that local economies have for ensuring that they are resilient to disturbances (e.g. climate change; market fluctuations, etc.) (WRI, 2008). The notion of resilience also highlights the importance of anticipating potential thresholds and tipping points for a global economy that is expanding within a finite biosphere is faced with (Rockström et al., 2009).

- ***Effects of Biodiversity on Ecosystem Functioning: A Consensus of Current Knowledge***.
  Ecological Monographs, Volume 75, Issue 1. Hooper, D., et al. 2005.
  http://www.esajournals.org/doi/abs/10.1890/04-0922

  This is a scientific overview of the biodiversity-ES linkages. The findings in the study lead to the general conclusion that biodiversity contributes positively to the overall resilience of an ecosystem, and that it is often crucial to the overall productivity of ecosystems: "*Using practices that maintain a diversity of organisms of different functional effect and functional response types will help preserve a range of management options*".

- ***The Roots of Resilience – Growing the Wealth of the Poor***. WRI, 2008.
  http://www.wri.org/publication/world-resources-2008-roots-of-resilience

This excellent and comprehensive report offers an overview of the various means of enhancing socio-ecological resilience in poor landscape. The paper highlights the importance of building ownership, capacity, and connections as the pillars for sustainable development. Case studies are offered to illustrate various means of enhancing resilience. The report notably argues that sustainable enterprise development offers an opportunity to address the challenges of climate change while enhancing local livelihoods.

- ***Planetary Boundaries: Exploring the safe operating space for humanity.*** Resilience Alliance. Rockström et al. 2009. http://www.stockholmresilience.org/research/researchnews/tippingtowardstheunknown/thenineplanetaryboundaries.4.1fe8f33123572b59ab80007039.html

  This paper proposes to define planetary boundaries for humanity, and outline 9 different types of boundaries, seven of which can be quantified: climate change (350 ppm); ocean acidification; stratospheric ozone; biogeochemical nitrogen and phosphorus cycles; global freshwater use; land system change; and rate of biodiversity loss (<10 species lost per million, annually). "*The proposed concept of 'planetary boundaries' lays the groundwork for shifting our approach to governance and management, away from the essentially sectoral analyses of limits to growth aimed at minimizing negative externalities, toward the estimation of the safe space for human development.*"

The Economics of Ecosystems and Biodiversity (TEEB)

The year 2010, international year of biodiversity, brought significant attention to the role of biodiversity and ecosystems in supporting human well-being. The flagship product of a global effort to give more prominence to the economics of conservation is the much anticipated study of The Economics of Ecosystems and Biodiversity (TEEB). Targeting different stakeholder groups, this comprehensive economic analysis of conservation is already poised to serve as a major milestone in the theoretical and practical explorations of the economic contributions offered by ecosystems and biodiversity.

- ***The Economics of Ecosystems and Biodiversity (TEEB)***. http://www.teebweb.org/

  TEEB is a major international initiative which aims to bring attention to the economic benefits of biodiversity and ecosystem services. It consists of five separate volumes, each targeted towards:

1 - researchers; 2 - policy makers; 3 - administrators; 4 - businesses; and 5 - citizens. The final report will be presented at the CBD Conference of the Parties in October, 2010. The main findings of the 'interim report' (released in 2008) were that i) the size of both the economic benefits of biodiversity as well as the costs of its loss is tremendous; ii) conservation is intimately linked to the challenge of reducing poverty, due notably to the critical importance of ecosystems for sustaining the livelihoods of the poor and vulnerable, and iii) the choice of the discounting rates applied to economic decisions (i.e. how much we value present over future well-being) involves significant ethical questions.

Some related links

- www.env-econ.net/ - Environmental economics
- www.ecoeco.org/ - Ecological economics
- www.biodiversityeconomics.org - Biodiversity economics
- www.resalliance.org/1.php - The resilience alliance
- www.teebweb.org - The Economics of Ecosystems and Biodiversity
- www.sustainablescale.org – The sustainable scale project
- www.is4ie.org/ - The International Society for Industrial Ecology
- http://www.resalliance.org/1.php - The Resilience Alliance

What is a Green Economy?

The first challenge in the exploration of this new topic consists in understanding what the Green Economy concept is about. Simply put, the 'green' economy can be considered synonymous to a 'sustainable' economy. However, the Green Economy concept often carries a more distinctive meaning, one that focuses specifically on the fundamental changes that are required to ensure that economic systems are made more sustainable. It results that the ongoing discourse on the Green Economy is often animated by ambitious and forward looking views on how to overcome the deeply rooted causes of unsustainable economic development.

- ***Transition to sustainability***: ***Towards a humane and diverse world***. Adams and Jeanrenaud, 2008. IUCN. http://cmsdata.iucn.org/downloads/transition_to_sustainability__en__pdf_1.pdf

  This paper considers the role of the environmental community in facilitating a transition towards a more sustainable society. Three priorities are offered: decarbonizes the economy; commit the environmental community to justice and equity; and conserve the biosphere. A key step forward consists in changing our conception of growth and prosperity – achieving more with less and creating real wealth and quality of life.

- ***Why We Need Green Economy – A Shared Analysis***. And, ***Our Vision towards a Green Economy*** Green Economy Coalition. 2010. http://www.greeneconomycoalition.org/sites/default/files/documents/GEC_SharedAnalysis_052010_p5.pdf

  The Green Economy Coalition (http://greeneconomycoalition.org/) unites a variety of organizations working in different fields (environment, development, labour, business) in an effort to outline an inclusive vision and roadmap for the transition to a green economy. This brief document presents the main challenges which need to be overcome (e.g. insufficient internalization of environmental externalities, harmful subsidies and economic policies, etc.) and articulates a vision for the future which involves a new economic paradigm. It also includes references to some key books and publications.

According to the United Nations Environment Programme (UNEP), "*Greening the economy refers to the process of reconfiguring businesses and infrastructure to deliver better returns on natural, human and economic capital investments, while at the same time reducing greenhouse gas emissions, extracting*

and using less natural resources, creating less waste and reducing social disparities." ***UNEP's Green Economy Initiative*** offers a useful platform for investigating the challenges and opportunities inherent to a transition to more sustainable economic development (www.unep.org/greeneconomy).

- ***An Introduction to the Green Economy Report***. UNEP. 2009. http://www.unep.ch/etb/publications/Green%20Economy/GER%20brochure%20(normal).pdf

  With the objective of finalizing a 'Green Economy Report' by the end of 2010, UNEP has already provided some of the fundamental elements defining and explaining the core principles and concepts underlying a green economy. The main tenants of this green economy initiative are: investing in natural capital; de-carbonizing the economy; and creating green jobs. The sectors analyzed in the report are: agriculture, cities, forests, renewable energy, transport, water, buildings, fisheries, industry, tourism, and waste management.

- ***Discussion Paper on Green Economy for Danida Strategy Process 2009***. IIED, 2009. http://www.povertyenvironment.net/files/PEP15-Green%20Economy.pdf

  This paper provides background information on the Green Economy concept as a framework for development. The analysis of the ongoing GE discourse finds three main recurrent themes that can serve as objectives to the Green Economy response to the recent economic downturn: economic resilience, biosphere protection, and social justice and distributional equity. The authors also identify 8 actions that can facilitate the GE transition: eliminating harmful subsidies, reducing waste and improving efficiency, supporting pro-poor and green economic sectors, responsible public procurement, building economic resilience, improved accountability for resource use, greening investment policies, and research and discussion on the GE assumptions and dilemmas.

- ***The Great Transition - A Tale of How It Turned out Right***. 2009. The New Economics Foundation. http://www.neweconomics.org/publications/great-transition

  This report makes the case for a necessary transition in the global economy, focusing specifically on the UK. Several steps in this transition are outlined, such as: building social and environmental value; more equitable redistribution; better controlled markets; and more localized economies.

- ***Reducing Work Time as a Path to Sustainability.*** John de Graaf, http://blogs.worldwatch.org/transformingcultures/wp-content/uploads/2009/04/Reducing-World-Time-as-a-Path-to-Sustainability-de-Graaf.pdf

  This paper makes the case for "*trading gains in productivity for time, by reducing the hours of labor and sharing them equitably*" in order to ensure a greener world economy.

Conventional assessments of economic growth have adopted gross domestic product (GDP) as the preferred ***indicator*** of national-level performance. A recently produced report commissioned by the French government offers some insights into the challenges of looking 'beyond GDP' to assess the status of national economies which reflects a more complete and meaningful assessment of human well-being (Stiglitz et al., 2009).

- ***GDP and beyond - Measuring progress in a changing world.*** Communication from the Commission to the Council and the European Parliament. August, 2009. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0433:FIN:EN:PDF

  This communication outlines five actions for better measuring progress in a changing world: 1. Complementing GDP with social and environmental indicators; 2. more timely information for decision-makers; 3. More accurate reporting on distribution and inequalities; 4. Developing a European Sustainable Development Scorecard; and 5. Extending national accounts to environmental and social issues.

- ***Stiglitz-Sen-Fitoussi report to the Commission on the Measurement of Economic Performance and Social Progress.*** Issues Paper, June 2009. http://www.stiglitz-sen-fitoussi.fr/documents/Issues_paper.pdf

  "*Aim of the report is to identify the limits of GDP as an indicator of economic performance and social progress, to consider additional information required for the production of more relevant indicators, to discuss how to present this information in an appropriate way, and to assess the feasibility of alternative measurement tools*."

- ***International Experience in Establishing Indicators for the Circular Economy and Considerations for China***. L. Pinter, 2006. http://www.iisd.org/pdf/2006/measure_circular_economy_china.pdf

This report, prepared for the World Bank, explores potential indicators for monitoring the progress of the circular economy concept – which refers to: "*the exchange of materials where one facility's waste, including energy, water, water, materials – as well as information – is another facility's input.*" It is closely related to the concept of industrial ecology/metabolism. It draws from relevant experiences in the EU, US, and Japan to consider the potential for applying circular economy indicators in China. The importance of integrating such indicators into national accounts systems, such as the existing System of Integrated Economic and Environmental Accounts, is emphasized.

Rethinking Economic Growth

A key concept of the green economy is one of sustainable growth. Ensuring that economic development is both sustained and sustainable is arguably the most important challenge of greening the economy. A recurring dilemma in the green economy discourse relates to the need for ***decoupling economic growth from unsustainable resource use***. This challenge is no small one, as slower growth (or 'de-growth') is also an important source of insecurity and instability (Jackson, 2009). Also, it can be argued that the current capitalist model which defines our modern economy has contributed significantly to human well-being (Scherer, 2010). Nevertheless, the transition to a green economy necessarily involves some reconsidering of the significance of economic growth.

- ***The Dynamics of Capitalism*.** Scherer. Harvard Kennedy School. 2010
  http://web.hks.harvard.edu/publications/workingpapers/citation.aspx?PubId=6988

  This paper examines the history and achievement of capitalism in terms of economic growth since the industrial revolution. The author emphasis the importance of innovation (largely endogenous to capitalism) in stimulating growth and argues that the gains from growth have been well shared between capitalists and workers alike. In conclusion, Scherer touts the virtues of capitalism, stating that: "*it is hard to conceive of a practical economic system exhibiting superior dynamic performance, notably, in the opportunity and incentive free markets provide to capitalistic entrepreneurs for technological innovation - more efficient production processes, new products conferring superior consumer utility, and better methods of business organization - which in turn has raised living standards by astonishing amounts. The problem for public policy is to secure the dynamic benefits of capitalism while minimizing its negative side effects*."

- ***Prosperity without Growth? The Transition to a Sustainable Economy*.** UK Sustainable Development Commission. http://www.sd-commission.org.uk/publications/downloads/prosperity_without_growth_report.pdf

  This report explores the meaning of economic growth and demonstrates where our economies have gone wrong. It has a section on the "*myth of decoupling*", which suggests that the scale of efficiency needed for decoupling growth from resource use is, in absolute terms, daunting. It also shows how ingrained the pursuit of novelty and social differentiation is in current consumer culture - a culture which is perpetuated through initiatives such as the 'green stimulus' response to the economic crisis. The author argues that something more is needed: "*a different kind of macro-economic structure is essential for an ecologically-constrained world*", which is outlined in the following section. Another point made in the report is that in order to overcome the adverse effects of consumerism, there are two avenues: 1. Dismantling perverse incentives for unproductive status competition, and 2. Establishing new structures that provide capabilities for people to flourish in less materialistic ways. It outlines three key steps in the transition to a greener world economy: building a sustainable macro-economy; protecting capabilities for flourishing; and respecting ecological limits.

Efforts to address the '*decoupling*' dilemma have given place to a variety of approaches to exploring ***alternative forms of economic growth and prosperity***, such as green growth (OECD, 2009), qualitative growth (Capra and Henderson, 2009) or inclusive growth (World Bank, 2008).

- ***What Kind of Growth Is Sustainable? Presentation of Arguments***. Commissioned by the Austrian Ministry of Agriculture, Forestry, Environment and Water Management http://www.growthintransition.eu/wp-content/uploads/wiw-argumentarium_short_en.pdf

  This paper defines growth - describing the different forms it can take, what it is driven by, and why it cannot continue indefinitely. The authors then make the case for alternative kinds of growth, which would "*include quality factors, fostering natural, human and social capital and thus focusing on the overall improvement of quality of life*".

- ***What Is Inclusive Growth?*** A World Bank information paper. 2008. http://siteresources.worldbank.org/INTDEBTDEPT/Resources/468980-1218567884549/WhatIsInclusiveGrowth20081230.pdf

This paper defines inclusive growth as one which is sustainable in the long-term, broad-based across sectors, and includes a large part of the country's labor force (with an emphasis on policies that remove constraints to growth and create a level playing field for investment). The focus is on equality of opportunity in terms of access to markets and resources

- ***Qualitative Growth - A Conceptual Framework for Finding Solutions to Our Current Crisis that Are Economically Sound, Ecologically Sustainable, and Socially Just*.** Capra, F. & Henderson, H. 2009.
  http://www.icaew.com/index.cfm/route/168855/icaew_ga/Technical_and_Business_Topics/Topics/Corporate_responsibility/Qualitative_Growth_by_Capra_and_Henderson__Corporate_Responsibility__Sustainable_Business__ICAEW/pdf

  This paper presents the concept of qualitative growth, which "*involves a dynamic balance between growth, decline, and recycling, and if it also includes development in terms of learning and maturing*."It describes growth as a central characteristic to an economy, which can be balanced and multi-faceted. The authors mention eco-design technologies as an important driver of the green economy. The brief ends with some basic recommendations for policy makers, which include an encouragement for a "*shift of perception from a product orientation to a service orientation and 'dematerializing' of our productive economies*" (e.g. car companies see their business as providing mobility, not the manufacturing of cars).

- ***Interim Report of the Green Growth Strategy: Implementing our Commitment for a Sustainable Future.*** OECD, 2010.
  http://www.oecd.org/document/3/0,3343,en_2649_37465_45196035_1_1_1_1,00.html

  The interim report outlines a framework for a Green Growth Strategy, which will notably strive to: develop a conceptual framework for green growth; quantify the effects of green growth; develop indicators; and providing a platform for international dialogue (The International Green Growth Dialogue Initiative). Preliminary results of the green growth 'toolkit' are discussed, and notably include – subsidy reforms and environmental taxes, green innovation, and green jobs. An appendix includes a tentative list of indicators for assessing green growth.

- ***The Growth Report – Strategies for Sustained Growth and Inclusive Development***. Commission on Growth and Development – Overview document, 2010.

http://www.growthcommission.org/storage/cgdev/documents/Report/growthreportoverview.pdf

"*This report identifies some of the distinctive characteristics of high-growth economies and asks how other developing countries can emulate them*". The paper goes on to detail some key 'ingredients' that are necessary to sustain economic growth. "*Growth entails a structural transformation of the economy, from agriculture to manufacturing, from a rural workforce to an urban one.*"

Some related links

- http://greeneconomycoalition.org/ - The Green Economy Coalition
- http://www.unep.org/greeneconomy/ - The Green Economy Initiative
- http://www.greeneconomics.org.uk/ - Green Economics Institute
- http://www.neweconomics.org/ - The New Economics Foundation
- http://steadystate.org/ - Center for the Advancement of the Steady State Economy (CASSE)
- http://blogs.worldwatch.org/greeneconomy/ - Worldwatch Institute blog on the Green Economy
- http://www.beyond-gdp.eu/ - Beyond GDP, an EU Roadmap
- http://www.worldresourcesforum.org/ - The World Resources Forum
- http://www.greengrowth.org/ - UNESCAP Green Growth website
- http://www.rmi.org/rmi/ - Rocky Mountain Institute

Macroeconomic Policies for a Greener World Economy

Under the impetus of the UNEP Green Economy Initiative, policy recommendations have primarily been formulated at the macroeconomic level. Inevitably, the transition to a greener world economy will require a global response. The G20 arguably represents the most prominent international policy platform where such issues are to be debated. Although some argue that environmental crises cannot be addressed at this level (Lawn, 2008), macroeconomic analyses are useful in terms of outlining the main trends and sectors that need to be targeted in the global effort to make economic development more sustainable and biodiversity-friendly.

- ***Macroeconomic Policies, Growth, and Biodiversity Conservation*.** P. Lawn. *Conservation Biology*, 2008. http://www3.interscience.wiley.com/journal/121544172/abstract

  This paper argues that macroeconomic policies cannot address the biodiversity crisis, due to the inherent difficulty in accounting for ecological constraints by using economic instruments. The author also argues that internalizing environmental values into markets will not be sufficient for ensuring sustainability, and will need to be complemented by regulatory measures (e.g. cap-and-trade schemes). The author suggests that mobility in international financial transfers should be restricted in order to strengthen the principle of comparative advantage.

- ***Global Green New Deal (GGND)*.** Policy Brief. UNEP. March 2009 http://www.unep.ch/etb/publications/Green%20Economy/UNEP%20Policy%20Brief%20Eng.pdf

  This paper offers a presentation of the GGND plan for greening the world economy in response to the recent economic and financial crises. It has three main objectives of 1) reviving the world economy, saving and creating jobs, and protecting vulnerable groups; 2) promoting sustainable and inclusive growth, the achievement of the MDGs, and the eradication of extreme poverty by 2015; and 3) reduce carbon dependency and the degradation of ecosystems. The brief makes a case for a greening of stimulus packages (asking for 1% of GDP to be allocated to green investments).

- ***'Green Stimulus', Economic Recovery, and Long-Term Sustainable Development***. Strand and Toman, 2010. World Bank Policy Research Working Paper. http://www.iadb.org/intal/intalcdi/PE/2010/04556.pdf

"This paper discusses short-run and long-run effects of "green stimulus" efforts, and compares these effects with "non-green" fiscal stimuli. Green stimulus is defined here as short-run fiscal stimuli that also serve a "green" or environmental purpose in a situation of "crisis" characterized by temporary under-employment. A number of recently enacted national stimulus packages contain sizeable "green" components. The authors categorize effects according to their a) short-run employment effects, b) long-run growth effects, c) effects on carbon emissions, and d) "co-benefit" effects (on the environment, natural resources, and for other externalities). The most beneficial "green" programs in times of crisis are those that can stimulate employment in the short run, and lead to large "learning curve" effects via lower production costs in the longer term. The overall assessment is that most "green stimulus" programs that have large short-run employment and environmental effects are likely to have less significant positive effects for long-run growth, and vice versa, implying a trade-off in many cases between short-run and long-run impacts. There are also trade-offs for employment generation in that programs that yield larger (smaller) employment effects tend to lead to more employment gains for largely lower-skilled (higher-skilled) workers, so that the long-term growth effects are relatively small (large). Ultimately, the results reinforce the point that different instruments are needed for addressing different problems."

- ***Towards a Global Green Recovery - Recommendations for Immediate G20 Action***. Edenhofer and Stern. 2009. http://www.pik-potsdam.de/members/edenh/publications-1/global-green-recovery_pik_lse

  This document contains a set of recommendations for the G20 on addressing the dual economic-climate crisis. These are: increasing energy efficiency; upgrading physical infrastructure; supporting clean technology markets; initiating flagship projects (e.g. carbon capture and storage); enhancing international R&D; incentivizing investment (e.g. by pricing carbon); and coordinating G20 efforts.

- ***Where is the Wealth of Nations? Measuring Capital for the 21st century***. World Bank. 2006. http://siteresources.worldbank.org/INTEEI/214578-1110886258964/20748034/All.pdf

  This report seeks to identify insights into the prospects for sustainable development by assessing the different forms of capital and gauging their respective contributions to wealth. The

findings suggest that intangible capital (human capital and institutions) are the preponderant forms of capital, worldwide. They find that natural capital constitutes approximately ¼ of wealth in low-income countries, making a strong case for sound ecosystem management in such countries. The report notably introduces the notion of development as a form of portfolio management, and discusses how governments might integrate the different forms of capital into the system of environmental and economic accounts (SEEA).

Macro-economic policies need not necessarily apply exclusively at the global level. Some actually argue, that regional-level policy processes and integration could effectively support sustainability efforts.

- ***Regional Integration, Growth and Convergence - Analytical Techniques and Preliminary Results***. Willem te Velde. ODI. 2008 http://www.odi.org.uk/resources/download/2498.pdf

  This paper examines how regional integration contributes to economic growth, and finds that it can be "*a key if not binding constraint to growth as 'deep' regional approaches can help to address crucial rail, road, air and energy links amongst countries*". The paper also finds that regional integration can play a significant role in stimulating productivity at the firm level in Africa.

An analysis of macroeconomic policies and trends at the national level is also useful in terms of assessing what actions can be implemented in a specific country.

- ***Green Recovery - A Program to Create Jobs and Start Building a Low-carbon Economy.*** Pollin et al. 2008 (pollin et al 2008.pdf)

  This report, specifically focused on the US economy, details a plan for increasing job opportunities by stimulating economic growth, stabilizing the price of oil, fighting climate change, and transitioning to a low-carbon green economy. The proposed plan would involve an investment of $100 billion over 2 years in 6 green infrastructure investment areas: buildings, transport, smart grids, wind power, solar power, and next-generation biofuels.

Some related links

- http://www.economist.com - The Economist magazine
- http://www.g20.org/ The G20 website

- http://www.worldbank.org/ - The World Bank
- http://www.ase.tufts.edu/gdae/policy_research/WTO05.htm - Global Development and Environment Institute at Tufts University:
- http://www.weforum.org/ - The World Economic Forum
- http://www.oecd.org - The Organization for Economic Cooperation and Development
- www.gggi.org – The Global Green Growth Institute

Greening International Trade

International trade is one of the most prominent features of the global economy, as it exerts a significant influence on national and sub-national level policies, presenting both risks and opportunities for sustainability. As a fundamental driver of the increasingly integrated global economy, international trade is one of the first areas in which macro-economic reforms could potentially lead to a more sustainable world economy. Trade will undoubtedly play a critical role in any green transition.

- ***Rebuilding Global Trade: Proposals for a Fairer, More Sustainable Future - Short Essays on Trade and Global Economic Governance***. Birbeck, C.D. and Melendez-Ortiz, R. (eds.) ICTSD. 2009. http://www.globaleconomicgovernance.org/rebuilding-global-trade-after-the-crisis

  A collection of short essays on trade and sustainable development. Authors discuss: 1) immediate trade priorities in the context of economic crisis, and 2) a forward-looking agenda for global trade governance. It was targeted towards influencing the G20 agenda. Articles cover topics such as the need for WTO reform, harnessing trade for a global green transition, the significance of the 2008 financial crisis, developing nations and global economic governance.

- ***Economic Transformation, Population Growth and the Long-Run World Income Distribution***. IMF Working paper. Chamon and Kremer. 2008. http://books.google.ch/books?id=8VAb2s4b_yYC&printsec=frontcover&dq=%E2%80%A2%09Economic+Transformation,+Population+Growth+and+the+Long-Run+World+Income+Distribution&source=bl&ots=Ar0ESSoIj7&sig=-_lIOx_Sh9Eu7hmpZDaVf3jYJKg&hl=en&ei=rcJbTOmHAcbDsgbTgox7&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBQQ6AEwAA#v=onepage&q&f=false

The authors present a model for the world economy in which the opportunities for development are linked to trade. The model suggests that more 'open' countries are likely to grow, but that these changes are likely to be modest if all developing countries become more open to trade. It also suggests that the rapid rise of China "*may hurt some developing countries in the short run, but will open tremendous opportunities for the remaining developing countries in the long run*."

- ***A Sustainable Development Roadmap for the WTO***. Cosbey, 2009. IISD. http://www.iisd.org/pdf/2009/sd_roadmap_wto.pdf

  "*The impasse in the Doha negotiations offers both grounds for concern about the current regime's model, and the breathing space in which to thoughtfully consider how that model might better serve today's needs. This short book argues that the WTO has committed to sustainable development as one of its basic objectives, and asks what the organization would look like if that objective were rigorously pursued. The answers (that range across areas as diverse as dispute settlement, accession, trade and environment, trade and development, and the negotiation process) identify what needs to be done and what role the WTO should play. The result is a timely roadmap for helping the WTO achieve its full economic, environmental and social potential*."

- ***Trade and Climate Change***. WTO-UNEP, 2009 http://www.unep.org/pdf/UNEP_WTO_Trade_and_CC_June_09.pdf

  This comprehensive report details the relationship between trade and climate change by highlighting how trade influences GHG emissions, how it can contribute to adaptation and mitigation efforts, as well as how climate change could influence trade. It also includes a detailed section on the trade implications of domestic climate change policies to address mitigation and adaptation. Finally, promising instruments for developing climate-friendly goods and technologies are presented and discussed.

- ***Trade and Deforestation: A Literature Review***. Robalino and Herrero, EfD Initiative. December, 2009. http://www.wto.org/english/res_e/reser_e/ersd201004_e.pdf

  This discussion paper, prepared for the WTO, analyses findings from existing literature on the links between trade and deforestation. Some of the notable common findings from the different literature are the high influence of agricultural output prices (e.g. differences between global

and local prices) on deforestation, and the significant risk of 'leakage' of deforestation threats that can compromise domestic (or regional) conservation policies.

Some related links

- http://ictsd.org/ - The International Center for Trade and Sustainable development
- http://www.wto.org/ - The World Trade Organization
- http://www.intracen.org/ - The International Trade Centre
- http://www.unctad.org/Templates/StartPage.asp?intItemID=2068 – The United Nations Conference on Trade and Development
- www.ciel.org – Center for International Environmental Law
- www.iisd.org – International Institute for Sustainable Development

Greening the Employment Sector

Much of the green economy discourse has focused on the issue of jobs. Indeed, a functional green economy will need to ensure that it is supporting the foundation of any sustainable economic system: employment.

- ***Green Jobs: Towards Decent Work in a Sustainable, Low Carbon World***. UNEP, ILO, OIE, ITUC. 2009. http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Report.pdf

  This comprehensive report (over 300 pages) defines green jobs, identifies drivers of green employment (e.g. innovation, carbon markets, tax reform, eco-labeling, etc.), and offers projections of potential pathways towards greener employment. It covers a wide range of industry sectors and provides key job findings for each of them. Two main findings of the report are that not all jobs are equally green (there are 'many shades of green') and that the introduction of green jobs in some sectors can have a 'radiating' effect and spread across the economy.

- ***Green Jobs for the Poor: A Public Employment Approach***. UNDP. 2009 (Green Jobs for the Poor UNDP 2009.pdf)

"*This paper explores the potential for governments to create 'green jobs' and align poverty reduction and employment creation in developing countries with a broader set of investments in environmental conservation and rehabilitation and also to preserve biodiversity, restore degraded land, combat erosion, and remove invasive aliens etc.*" Paper is largely inspired from the South African *Working for Water* programme.

Useful links:

- http://apolloalliance.org/ US-based website dedicated to the topic: Clean Energy, Good Jobs.
- http://www.bluegreenalliance.org/ partnership of labour unions and environmental organizations
- http://www.ituc-csi.org/ - International Trade Union Confederation
- http://www.greenjobsconference.org/site/c.rvI3IiNWJqE/b.4950285/k.BE91/Home.htm US Conference on green jobs (May, 2010).

Climate Change Mitigation

At the top of the international 'green agenda' is the increasingly prominent issue of global climate change. The need to reduce the carbon intensity of our economic systems has become a recurrent theme of climate change discussions. Recognizing that both markets and government regulations need to be part of the solution of combating climate change, the policy tools which are most often debated are taxes and cap-and-trade schemes (Cooper, 2006). However, there are many other possible areas of intervention for encouraging a transition towards a low-carbon economy. Additional areas of intervention which are commonly raised are the need to reform fiscal (Lang et al., 2010) and industrial (Zarsky, 2010) policies that support carbon-intensive enterprises.

- ***Building a Green Economy***. Paul Krugman, April 2010.
  http://www.nytimes.com/2010/04/11/magazine/11Economy-t.html?pagewanted=1&hp

  This article from the New York Times Magazine offers a brief survey of the economics of lessening climate change. It provides an overview of the basic rationale behind 'cap-and-trade' (quantity-based) and taxation (price-based) approaches to mitigation policy and argues that a market-based solution is essential for addressing climate change: "*what we need are market incentives for reducing greenhouse-gas emissions – along with some direct controls over coal use*

– *and cap and trade is a reasonable way to create those incentives.*" He then goes on to discuss the international (and domestic US) politics surrounding the issue, arguing that strong and meaningful EU and US leadership should be sufficient to bring China and the rest of the world on board in effectively combating climate change.

- ***Alternatives to Kyoto: The Case for a Carbon Tax***. Richard Cooper. 2006. Harvard University. http://www.wcfia.harvard.edu/node/2588

  This paper discusses the shortcomings of an international emissions trading regime to reduce greenhouse gas emissions and makes the case for the introduction of a global carbon tax.

- ***Climate-resilient Industrial Development Paths: Design Principles and Alternative Models***. L. Zarsky, Tufts University and IIED. 2010. http://www.ase.tufts.edu/gdae/Pubs/wp/10-01ClimateResilience.pdf

  This paper presents development as an "*increase in local capacities for production and innovation*" and argues a climate-resilient economy must be made consistent with such a perspective by designing industrial policies that are: pro-active, diverse, invest in low-carbon energy sources, adaptive and responsive to local conditions, and governed through accountable partnerships involving government, private sector and civil society. The author then goes on to explore how these principles can be applied in different models of economic development, finding that the appropriate policy response to climate change will inevitably need to adapt to and follow a variety of development paths.

- ***Increasing the Momentum of Fossil-Fuel Subsidy Reform: A Roadmap for International Cooperation***. IISD, Lang et al., 2010. http://www.iisd.org/pdf/2010/increasing_momentum.pdf

  This paper attempts to address the question of the best place/process to house an international agreement on reducing fossil-fuel subsidies. It reviews the main forums for international collaboration on addressing the issue of fossil-fuel subsidies (WTO, UNFCCC, and G20) and outlines a roadmap for enhancing collaboration and reaching a negotiated agreement. Current discussions in the context of G20 meetings are seen as a potential first step towards improved collaboration on this issue.

- ***The Economics of Climate Change – A Post-Stern Perspective***. http://cat.inist.fr/?aModele=afficheN&cpsidt=21887911

  This paper, which is rather technical, begins by reaffirming the point that combating climate change makes economic sense. He then explores the issue of how future benefits should be discounted for as well as how the impacts of climate change on natural capital should be accounted for.

- ***Other Worlds Are Possible - Human Progress in an Age of Climate Change*.** Up in smoke series. IIED 2009 http://www.iied.org/pubs/pdfs/10022IIED.pdf

  This report is part of a series on the effects of climate change to human development. It aims to outline "*a new model for human progress and development that is climate proof and climate friendly and gives everyone a faire share of the natural resources on which we all depend*."Key trends demanding change in how development is secured are presented, and then four essays written by Southern authors are compiled.

Some relevant links

- http://www.climatechangeecon.net/ - Climate Change Economics
- http://www.realclimateeconomics.org/ - The Real Climate Economics
- http://www.theccc.org.uk/ - The UK Committee on Climate Change
- http://www.pewclimate.org/ - The Pew Center on Climate Change
- www.unfccc.int – The United Nations Framework Convention on Climate Change

Financing conservation - Building and Capitalizing on the Biodiversity Business Case

As presented in the Green Economy Initiative (UNEP), a greater investment in our natural capital is a fundamental component of the Green Economy. Such considerations are based on the premise that environmental values are currently not adequately integrated into economic and policy decision-making processes. A stronger recognition of nature's contribution to human well-being is essential for the transition to a green economy to take place.

A first step towards the integration of biodiversity and ecosystems into markets and policies consists is to value these assets. However, the ***economic valuation of nature*** is no easy endeavor. Although biodiversity is a widely used concept, it does not lend itself well to any type of economic quantification. Moreover, its linkages to ecosystem processes and services are still on ongoing source of debate. Heal (1999) breaks down the values of biodiversity into those related to ecosystem productivity (e.g. plant pollination), the insurance value (e.g. storm buffering, erosion control), and to the contribution to human knowledge (e.g. medical research). There are many ways in which nature can be valued in economic terms. The concept of ***natural capital*** is a useful way to frame the economic significance of ecosystems and biodiversity.

- ***Biodiversity as a commodity***. Heal, G. 1999. Columbia University. http://www2.gsb.columbia.edu/faculty/gheal/General%20Interest%20Papers/pw-99-07.pdf

  The first part of the paper is particularly insightful, and offers an excellent breakdown of the various values that biodiversity can take on – productivity, insurance, and knowledge. After expanding on these 3 categories, Heal goes on to explore the linkages between biodiversity and ecosystem services. The latter part of the paper explores how biodiversity can eventually become integrated into markets as a commodity.

- ***Ecosystems as Natural Assets***. E. Barbier. Foundations and Trends in Microeconomics: 4:8. 2009. http://www.ucl.ac.uk/bioecon/11th_2009/Barbier.pdf

  The paper presents the natural capital/asset approach to valuation as it is applied to ecosystems. A model is developed which shows the "*importance of valuing ecosystem services*

to the optimal allocation of landscape among competing uses". The paper is substantiated by an example of valuation in a coastal landscape.

- ***How much is an Ecosystem Worth? Assessing the Economic Value of Conservation.*** Pagiola et al., 2004. IUCN, TNC, The World Bank. http://www.cbd.int/doc/case-studies/inc/cs-inc-iucn-nc-wb-en.pdf

  This is a very comprehensive and illustrated study of ecosystem valuation, with many helpful tables and figures. The paper explores the strengths and weaknesses of valuation and concludes by comparing the three main approaches to ecosystem valuation. It also provides a good list of references for some follow-up reading.

- ***The Natural Capital Approach - A Concept Paper***. Voora, V. and Venema, H. IISD. 2008. http://www.iisd.org/pdf/2008/natural_capital_approach.pdf

  This concept paper describes an "*ecosystem-scale application of ecological goods and services valuation for policy analysis and design*". It is meant to complement national-level environmental accounts. It is based on experience from the lake Winnipeg ecosystem in Canada to show the usefulness of the natural capital approach to valuation and environmental accounting.

Ecosystem Services

An increasingly popular concept in conservation finance is ***ecosystem services***. From an economic perspective, this notion is particularly attractive in its capacity to integrate previously unrecognized ecological values (natural processes, such a water filtration, carbon sequestration, and plant pollination) into markets. An innovative characteristic of the 'ecosystem services' language is that it goes beyond the public/private distinction and strives towards the identification of specific beneficiaries of ecosystem services in both spheres. These can be individuals, businesses, local communities, user groups such as associations of fishermen or hunters, or even national governments. The idea of paying for ecosystems is now seen as one of the most promising approaches to the scaling up of environmental financing efforts.

- ***Restoring Nature's Capital – An Action Agenda to Sustain Ecosystem Services***. WRI Report. Available onle at: http://www.wri.org/biodiv/pubs_description.cfm?pid=4309#pdf_files

This is a comprehensive report on taking action towards managing ecosystem services. Five concrete action plans are proposed, including one to "*align economic and financial incentives with ecosystem stewardship*". Then, either through existing institutions, or through the creation of new ones (such as ecosystem services districts, for example) the paper explores ways of achieving the desired actions.

- ***Valuing Ecosystem Services***. Paine Webber Working Paper No. 98-12. Heal, G. 1999. Columbia University. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=279191

  This is an excellent complementary reading to the above-mentioned work on biodiversity as a commodity. The inherent difficulties in valuing ecosystem services are presented and analyzed, and the author concludes that the design of adequate incentives is more important than the valuation exercise.

- ***Managing Ecosystem Resources***. Arrow et al., 1999. Environmental Science and Technology http://www.colby.edu/personal/t/thtieten/Mneco.pdf

  This is a paper written by some leading economists and ecologists on environmental management as it relates to ecosystem services. The authors notably state that "*the greatest challenge perhaps is in the valuation of the manifold services ecosystems provide to humanity, and in maintaining the resiliency that sustains them. To this end, we recommend precautionary and adaptive approaches, coupled with mechanisms to tighten cost and benefit loops and internalize externalities, including local empowerment and common property resource management*".

- ***Ecosystem Services - Accounting for what matters***. EEA Briefing, 2008 (EEA 2008.pdf)

  This brief presents the accounting approach to addressing the undervaluation of ecosystem values and argues for the development of a quantitative framework for assessing drivers, pressures, state, and impacts.

In recent years, there has been growing interest in developing ***Payments for Ecosystem Services*** (PES) as a means of capturing biodiversity values and integrating them into economic systems. While payments for ecosystem services (PES) most often take the shape of financial transfers, they can also apply to a broader set of rewards, including technology transfer, capacity building, and debt relief. By offering

economic incentives for maintaining ecosystem services, PES operates on the basis that market forces can offer an efficient and effective means of supporting sustainable development objectives. However, PES remains a specific policy tool, not a one-size-fits-all model for sustainable development.

- ***Developing Markets for the Ecosystem Services of Forests***. Powell et al., 2002. Forest Trends. http://www.forest-trends.org/publication_details.php?publicationID=131

  This is a general paper on market-based instruments for ecosystem services. It provides a basic overview of existing types of schemes and then poses the key questions necessary for developing new markets. It concludes with some words of advice on making PES deals.

- ***A Gateway to Payments for Ecosystem Services***. IUCN 2009. http://cmsdata.iucn.org/downloads/a_gateway_to_pes_d_huberman.pdf

  This annotated bibliography, organized similarly to this resource, is intended to serve as an introduction into the world of PES. It provides key references for theoretical and conceptual background, case studies, market overviews, etc. It is focused on forest ecosystems.

Several efforts have been made to develop PES at the international level. While the market for carbon credits is already in existence and global in scope, it is hoped that it can be expanded to cover a wider range of environmental values (IPES, 2007).

- ***State of the Forest Carbon Markets, 2009 - Taking root and branching out***. Ecosystem Marketplace. http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/SFCM.pdf

  This report, which is published on a yearly basis, offers a comprehensive overview of the status of the growing market for forest carbon projects. It highlights that projects in Africa are becoming increasingly common, and reports that: "*From 2007 through the first half of 2009 alone, forest carbon markets have funneled roughly $100 million into forestry conservation projects around the world, transacting 20.8 million MtCO2 in the process*."

- ***Developing International Payments for Ecosystem Services – Greening the World Economy.*** IUCN-UNEP. 2007. (IPES brochure 0607.pdf)

  This is a brief introduction into the development of International Payments for Ecosystem Services (IPES). It provides the main conceptual grounding for the recently launched IPES

initiative, whose main objective is to "*support sustainable development through biodiversity conservation at the global scale*". It provides insights into a multi-scale application of PES, and highlights REDD as an immediate opportunity for bundling PES and tapping into the carbon market to achieve channel greater support for conservation efforts.

- ***An International Market-based Instrument to Finance Biodiversity Conservation: Towards a Green Development Mechanism***. Report from an expert workshop, Amsterdam, February 2009. (Amsterdam expert meeting final 2009.pdf)

  This is the report of a workshop on discussing the development of a GDM, which would help scale-up financing for biodiversity conservation. It is hoped that this will launch a process of finalizing a proposal to be presented to the CBD in October 2010. Four preliminary proposals are put forward: tradable conservation options; offsets with international support; biodiversity footprint taxation with biodiversity supply mechanism; and the greening of commodity imports.

Innovative Financing Mechanisms

Beyond PES, other forms of environmental finance are also proposed for better capturing biodiversity and ecosystem values at the global levels. These include the use of offsets, conservation banks, biotrade and eco-labeling. A recent workshop, convened by the CBD, further explored the different options available for increasing the amount of funding for conservation (CBD, 2010).

- ***Innovative Financial Mechanisms – Report of the Proceedings from the International Expert Workshop on Innovative Financial Mechanisms***, CBD, January 2010.
  http://www.cbd.int/doc/?meeting=WSIFM-01

  This report summarizes the proceedings of an expert workshop which fed into the CBD negotiations on financing biodiversity conservation. The aim of the workshop was to identify possible means and approaches of increasing the amount of resources available for implementing the mission of the CBD. The themes discussed during the workshop were the following: Payments for Ecosystem Services; Biodiversity Offsets; Markets for Green Products; Environmental Fiscal Reform; Biodiversity in International Development Finance; Biodiversity in Climate Change Funding.

- ***Business, Biodiversity Offsets, and BBOP - an overview***. Forest Trends, 2009. http://content.undp.org/go/newsroom/publications/environment-energy/www-ee-library/biodiversity/business-biodiversity-offsets-and-bbop-an-overview.en

  This overview documents takes stock of the first phase of implementation of the BBOP project (2004-2008). It highlights the main achievements and outstanding challenges. Priorities for the next phase (running until 2011) are outlined and include, inter alia, the elaboration of verification and auditing protocols, an enlarged portfolio of project types, and the aggregation of projects for planning at the ecoregional and landscape scales.

- ***Banking on Biodiversity - Innovations for a sustainable economy***. R. Bayon. The Worldwatch Institute, Chapter 9 of the 2008 State of the World Report. http://books.google.ch/books?id=kvERRMGr4-oC&printsec=frontcover&dq=Innovations+for+a+sustainable+economy+bayon&source=bl&ots=QUJERIcbJn&sig=VJa2tK5bHuo9ofGZ7TdzJzq_YqM&hl=en&ei=Wt1bTKWxEZahsQbKquxm&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBcQ6AEwAA#v=onepage&q=Innovations%20for%20a%20sustainable%20economy%20bayon&f=false

  This chapter from a book – available for online reading – presents the different forms of market-based approaches to conservation: wetland banking, species banking, and biodiversity offsets. The author makes the case that market forces can and should be harnessed to support conservation.

- ***BioBanking, Biodiversity Banking and Offsets Scheme - A scheme overview***. 2007. NSW Department of Environment and Climate Change, Australia. http://catalogue.nla.gov.au/Record/3795074

  This information booklet provides an overview of the Biodiversity Banking and Offsets Scheme in New South Wales, Australia. It concludes with an assessment of conditions for success, which are: keeping up to date with latest science; keeping an up-to-date and functional register of transactions; adequate reporting; and compliance and enforcement.

- ***The Use of Market-based Instruments for Biodiversity Conservation – The Case of Habitat Banking***. Eftec and IIEP, 2010. http://ec.europa.eu/environment/enveco/studies.htm#2

This report reviews the concept of habitat banking, which is defined as: "*a market where credits from actions with beneficial biodiversity outcomes can be purchased to offset the debit from environmental damage. Credits can be purchased in advance of, and without ex-ante links to, the debits they compensate for, and stored over time*." It looks into its use in relation to the management of Natura 2000 sites in Europe, highlighting the importance of balancing market flexibility within an appropriate regulatory framework.

- ***UNCTAD BioTrade Initiative – BioTrade Principles and Criteria***. UNCTAD, 2007.

http://www.biotrade.org/BTFP/BTFP-docs/Working_docs/UNCTAD_BT_PC_en.pdf

BioTrade is defined as: "*activities related to the collection or production of, transformation, and commercialization goods and services derived from native biodiversity according to criteria of environmental, social, and economic sustainability*". This report provides an in-depth theoretical framework for BioTrade. The seven key principles are: conservation; sustainable use; equitable benefit sharing; socio-economic sustainability; legal compliance; respect for actors' rights; and clear land tenure and resource access.

- ***Introduction to Ecolabelling***. Global Ecolabelling Network. 2004
  http://www.globalecolabelling.net/pdf/pub_pdf01.pdf

  This paper offers a general introduction to the eco-labelling concept, describing the different types of labels, the objectives, guiding principles, and participants. It also includes a section on 'measuring success'.

- ***The Evidence Base for Environmental and Socioeconomic Impacts of 'Sustainable' Consumption.*** Blackman and Rivera, 2010. Resources for the Future. http://www.rff.org/RFF/documents/EfD-DP-10-10.pdf

  This paper contains an empirical analysis of the effectiveness of agriculture and tourism related sustainability certification schemes. The authors find that the evidence base on the effectiveness of such schemes is quite limited.

Some related links

- http://www.natcap.org/ - Natural Capitalism

- http://naturalcapitalproject.org - The Natural Capital Project
- www.forest-trends.org – Forest Trends
- http://www.ecosystemmarketplace.com/ - The Ecosystem Marketplace
- www.biodiversityeconomics.org – Biodiversity Economics library
- http://www.conservationfinance.org/ - The Conservation Finance Alliance
- http://www.forest-trends.org/biodiversityoffsetprogram/ - The Business and Biodiversity Offsets Programme
- http://gdm.earthmind.net - Towards a Green Development Mechanism
- http://www.isealalliance.org/ - The ISEAL Alliance
- http://www.biotrade.org/ - The BioTrade Initiative
- http://www.ethicalbiotrade.org/ - The Union of Ethical BioTrade (UEBT)
- http://www.wetcarbon.com – Wet Carbon Partnership

Engaging with the Private Sector

A strengthened biodiversity case is best exploited by private enterprises. Inevitably, private companies will have to play a leading role in the greening of the economy, notably by mobilizing the necessary resources for investing in sustainable projects. While there are likely to be significant opportunities for businesses who pro-actively engage in the transition to a green economy (Bishop et al., 2008), it is not always simple to get companies to change their usual business models. Such changes will need to happen with a stronger recognition and internalization of environmental values (Hawkens, et al., 1999). The engagement of private sector companies is not only essential for those large businesses that have a significant impact on the environment, but also for the many small-scale operations in the informal sector.

- ***Building Biodiversity Business***. IUCN Shell, Bishop et al., 2008. http://data.iucn.org/dbtw-wpd/edocs/2008-002.pdf

  This comprehensive report reviews the different initiatives and opportunities for building biodiversity business. These businesses are those that generate benefits through conservation or that use natural resources in a sustainable and equitable manner. It contains an impressive amount of links and references in the different sections covering: the biodiversity challenge, the business case, the biodiversity business landscape, and relevant mechanisms.

- ***Natural Capitalism*** **-** Hawkens, P., et al. 1999. Book partially available for download on: http://www.natcap.org/

  This is "*the first book to explore the lucrative opportunities for businesses in an era of approaching environmental limits*". It "*describes a future in which business and environmental interests increasingly overlap, and in which business can better satisfy their customers' needs, increase profits, and help solve environmental problems all at the same time*." It presents 4 principles to natural capitalism: increased resource productivity; redesigning industry on biological models with closed loops and zero waste; shifting from the sale of goods to the provision of services; and reinvesting in natural capital.

- ***Are You a Green Leader? Business and Biodiversity: Making the Case for a Lasting Solution***. UNEP-WCMC and UNEP, 2010. http://www.unep.fr/scp/business/publications/pdf/Business_and_biodiversity_16pp_PDF.pdf

  This report, tailored specifically for a business audience, reviews the business case for biodiversity; provides an overview of impacts by sector and highlights existing and potential opportunities for companies. The document covers a wide range of sectors and complements existing and ongoing work on business and biodiversity.

- ***Business Biodiversity Efforts in Key Industry Sectors: An Overview***. Background paper for the Business and Biodiversity meeting - CBD/UNEP, Jakarta, November 2009. http://www.cbd.int/doc/meetings/biodiv/b2010-03/official/b2010-03-01-unep-background-note-en.pdf

  This paper offers an overview of major biodiversity initiatives driven by leading industries. It covers the mining, energy, agrifood/fisheries, construction & forestry, tourism, pharmaceuticals, cosmetics, fashion, and finance sectors. It also offers an overview of future challenges for mainstreaming biodiversity in business practice. The paper contains many useful references for further information.

- ***The Business of Sustainability - Imperatives, Advantages, and Action***. Boston Consulting Group. 2009. http://www.businessinsociety.eu/resources/4134

  This paper presents the results of a survey of more than 1500 corporate executives and managers about their views on sustainability. The results show that a majority of companies are not "*acting decisively to fully exploit the opportunities and mitigate the risks that sustainability presents*". The survey also showed that leading business are reaping benefits from their engagement in sustainable development.

- ***Nike Considered: Getting Traction on Sustainability***. Henderson et al. 2009. MIT https://mitsloan.mit.edu/MSTIR/sustainability/NikeConsidered/Documents/08.077.Nike%20Considered.Getting%20Traction%20on%20Sustainability.Locke.Henderson.pdf

  This study offers an overview of Nike's Corporate Social Responsibility Strategy, discussing how the company organized CSR around return on investment - to make it an "*intrinsic part of a*

healthy business model, complete with profitability and sustainable growth." The company focused on product design as the main point of intervention. A sustainability assessment tool is described - the 'Considered Index'.

- ***Conscious Capitalism - Creating a New Paradigm for Business***. John Mackey, CEO of Whole Foods Market. 2007. http://www.flowidealism.org/2007/Downloads/Conscious-Capitalism_JM.pdf

  Written by the CEO of Whole Foods, this paper presents a new paradigm for business which is based on their sense of purpose, as opposed to their pursuit of profit. He argues that "*entrepreneurs discover and/or create the purpose of business - not investors, or politicians, or lawyers, or economists*." The paper argues that "*without consistent customer satisfaction, employee happiness and commitment, and community support, the short-term profits will probably prove to be unsustainable over the long-term*."

- ***The Business Case for Climate Protection***. Hunter Lovins. 2009. Natural Capital Solutions. http://summits.ncat.org/docs/BusinessCase_forClimateProtection.pdf

  This paper, presented at the Copenhagen climate conference, describes private sector engagements and efforts in combating climate change - highlighting how sustainability is increasingly making business sense - as demonstrated by leading companies such as DuPont, ST Microelectronics, and Walmart. Lovins suggest that energy efficiency in buildings is a good place for businesses to start working on increasing their profitability and sustainability. The author also touches on different topics such as green jobs, renewable energy, and China, and advocates for an integrated approach to the triple bottom line - one which jointly considers economic, social, and environmental topics.

- ***Business Linkages: Enabling Access to Markets at the Base of the Pyramid***. Report of a roundtable dialogue - Jaipur India. 2009. http://www.hks.harvard.edu/m-rcbg/CSRI/publications/report_35_jaipur_2009.pdf

  This paper focuses on enabling access to markets for producers and entrepreneurs operating at the 'Base of the Pyramid' (BOP) – "*the four billion people worldwide who earn less than $8 a day*". The three different types of BOP business models are explained: 1. Buying from the BOP, 2. Distributing through the BOP, and 3. Selling to the BOP. Then, the main challenges are

discussed, such as building knowledge and skill, strengthening policy and regulatory environments, and gaps in infrastructure.

The role of ***innovation*** as a motor for enhancing sustainable business models is seen as a significant opportunity for supporting the transition to a green economy.

- ***The Porter Hypthesis at 20: Can Environmental Regulation Enhance Innovation and Competitiveness?*** Chair's Paper prepared for the World Conference on Environmental and Resource Economics, Montreal, June 2010. http://www.sustainableprosperity.ca/event/porter-hypothesis-20-june-27-28-montreal-qc

  This paper presents reviews the empirical evidence available on verifying the 'Porter Hypothesis', which stipulates that: "*strict environmental regulations do not inevitably hinder competitive advantage against foreign rivals; indeed, they often enhance it*." It outlines some means of developing appropriate policies that can trigger the right kind of innovation that can offset to cost of complying with environmental regulations. Three principles are proposed to ensure policies help companies enhance competitiveness: creation of maximum opportunity for innovation, fostering continuous improvement, and leaving as little room as possible for uncertainty at every stage.

- ***Why Sustainability Is now the Key Driver of Innovation***. Nidumoglu et al., 2009. Harvard Business Review.
  http://www.sustainableprosperity.ca/files/HBR%20Sustainability%20Report.pdf

  This article explains why sustainability should be the main source of innovation in the coming years. It details the fundamental changes that need to be brought to current business models, products, technologies and processes. It also presents a five-step process for businesses to become sustainable: 1. Viewing compliance as opportunity, 2. Making value chains sustainable, 3. Designing sustainable products and services, 4. Developing new business models, and 5. Creating next-practice platforms. The main point made throughout is that innovation and sustainability need to be synonymous.

An important means of encouraging greater private sector engagement in sustainability consists in ensuring that companies are adopting robust ***sustainability standards***. The idea is that more sustainable companies will gain a competitive advantage in the marketplace by acting as leaders in their specific

sectors. More recent efforts have focused on looking at how such standard could be expanded to take into consideration the entire life-cycle and value-chain of products.

- ***Voluntary Sustainability Standards and Economic Rents - The Economic Impacts of Voluntary Sustainability Standards along the Coffee, Fisheries and Forestry Value Chain***. Sexsmith and Potts 2009. IISD http://www.iisd.org/pdf/2009/voluntary_standards_eco_rents.pdf

  This background paper presents voluntary standards for commodities, and assesses the impacts they have on: markets; the generation of economic rents, and on the distribution of income throughout the value chain. Three recommendations are formulated: 1. Improve availability of market information, 2. Build access to sustainable markets for developing countries, and 3. Encourage take-up of chain-of-custody certification.

- ***Voluntary Sustainability Standards and Value Chain Governance - How sustainability standards affect the distribution of decision-making power in global value chains***. Sexsmith and Potts. 2009. IISD http://www.iisd.org/pdf/2009/voluntary_sustainability_standards_gov.pdf

  "*This paper aims to assess the potential and actual impacts of select voluntary sustainability standards on participatory decision-making within global value chains in the coffee, forestry and fisheries sectors. A set of indicators is used to assess the compliance of standards organizations with seven principles of participatory governance: representation, accountability, checks and balances, equity, effectiveness, efficiency, and participatory governance trade-offs.*

Some related links

- http://www.wbcsd.org - The World Business Council for Sustainable Development
- http://www.businessandbiodiversity.org/index.html - The Business and Biodiversity Resource Centre
- http://ec.europa.eu/environment/biodiversity/business/index_en.html - The EU Business and Biodiversity Platform
- http://www.unglobalcompact.org - The UN Global Compact
- http://www.globalreporting.org/Home - The Global Reporting Initiative
- http://lcinitiative.unep.fr/ The Life-cycle Initiative

- http://www.sustainableprosperity.ca/ - Sustainable Prosperity
- http://www.sustainability.com – SustainAbility
- http://www.unido.org/ - United Nations Industrial Development Organization

Looking More Closely at Some Specific Industry Sectors

Before looking into some specific sectors, it is useful to have a general picture of the overall structure of the global economy in terms of economic sectors.

- ***Structural Change in the World Economy: Main Features and Trends***. UNIDO, 2009. http://www.unido.org/fileadmin/user_media/Publications/Pub_free/Structural_change_in_the_world_economy.pdf

  This report presents an overview of the global economy in terms of the agricultural, industrial, and service sectors, highlighting how they have evolved in terms of their share of world value added. It includes a quantitative analysis of changes in regional contributions to world production. Three main findings are provided: 1. the long-term rise of the service sector has slowed in the past decade; 2. the rate of increase in the share of world value added for Asia and North America is diminishing in favor of other regions, especially Europe; and 3. structural change in the manufacturing sector has been accelerating in the past two decades.

Agriculture

Agriculture represents the most fundamental component of our economic systems. However, its role in shaping the global economy has evolved significantly over the past centuries.

- ***Agriculture in the Economy: The Evolution of Economists' Perceptions over Three Centuries***. Throsby, 1986. http://ageconsearch.umn.edu/bitstream/12581/1/54030005.pdf

  This article provides a historical perspective on how agriculture has been considered by different economic paradigms and thinkers. Particular attention is paid to the link between agriculture and development theory.

- ***The Future of Production Systems in a Globalized World***. Elena Bennett and Patricia Balvanera. 2007. http://nrs-staff.mcgill.ca/bennett/pdfs/07_frontiers_prodsystems.pdf

Building on the concept of ecological resilience, this paper focuses on production systems and explores ways in which to mitigate impacts of an increased demand for food on the provision of ecosystem services. The authors address a very interesting question: "*How do ecosystems provide bundles of services and what are the interactions among such services, including trade-offs and synergies?*"

From the perspective of conservationists, agriculture often represents a significant threat to the preservation of biodiversity. However, productive landscapes can also contribute significantly to the conservation of biodiversity (McNeely and Sherr, 2001). The linkages between environmental issues and agriculture are anything but straightforward (Thornton and Herrero, 2010). While a reflection on the place of the agricultural sector in a green economy inevitably involves a consideration of global markets and supply chains, it also needs to be framed within the broader context of rural development (Brown and Sander, 2007). Global leaders in the agriculture sector have an important role to play. Ongoing efforts, such as the Sustainable Agriculture Alliance provide some useful first steps (SAI, 2009). However, it is important to look at smaller scales, as the role of small-scale producers is particularly critical to ensuring an equitable and meaningful transition to a green economy (Cook, 2009).

- ***Agricultural Ecosystems – Facts and Trends***. WBCSD – IUCN, 2008.
  http://www.wbcsd.org/DocRoot/hecbd2TCBtPqRBOGXoi2/AgriculturalEcosystems.pdf

  This document provides an overview of the context framing the relationship between agriculture and ecosystems, highlighting main trends (population, urbanization, consumption patterns). It then focuses on biodiversity and ecosystem services, and goes into further detail around some of the main environmental issues affecting agriculture (climate change, water, etc.) highlighting examples of best practice in each instance. It concludes with a section on future challenges.
- ***Common Ground, Common Future – How Ecoagriculture Can Help Feed the World and Save Wild Biodiversity***. McNeely and Sherr, 2001. Ecoagriculture Partners.

  http://www.ecoagriculturepartners.org/documents/reports/FinalPrintingReport2.pdf

  This paper introduces the challenge that ecoagriculture is designed to address: the loss of biodiversity and the increase in demand for agriculture. Then, six different ecoagriculture

strategies are presented. They all have in common that they strive for a better joint management of conservation and agricultural production in support of rural livelihoods.

- ***The Inter-linkages between Rapid Growth in Livestock Production, Climate Change, and the Impacts on Water Resources, Land Use, and Deforestation***. Thornton and Herrero, 2010. Background Paper to the 2010 World Development Report. World Bank http://library1.nida.ac.th/worldbankf/fulltext/wps05178.pdf

  "*Livestock systems globally are changing rapidly in response to human population growth, urbanization, and growing incomes. This paper discusses the linkages between burgeoning demand for livestock products, growth in livestock production, and the impacts this may have on natural resources, and how these may both affect and be affected by climate change in the coming decades. Water and land scarcity will increasingly have the potential to constrain food production growth, with adverse impacts on food security and human well-being. Climate change will exacerbate many of these trends, with direct effects on agricultural yields, water availability, and production risk. In the transition to a carbon-constrained economy, livestock systems will have a key role to play in mitigating future emissions. At the same time, appropriate pricing of greenhouse gas emissions will modify livestock production costs and patterns... Development of comprehensive frameworks that can be used for assessing impacts and analyzing trade-offs at both local and regional levels is needed for identifying and targeting production practices and policies that are locally appropriate and can contribute to environmental sustainability, poverty alleviation, and economic development*."

- ***At Loggerheads? Agricultural Expansion, Poverty Reduction, and Environment in the Tropical Forests***. Chomitz, 2007. The World Bank. http://siteresources.worldbank.org/INTTROPICALFOREST/Resources/2463822-1161184206155/3060670-1161608416166/PRR-AL_SAOverviewwebnonembargo.pdf

  This is a very comprehensive report (over 300 pages) on the linkages between agriculture, livelihoods, and sustainability in tropical forests. The author stylizes 3 main forest types (managed, frontier, and untouched) and studies recent trends in forest change. After a detailed outline of the main issues currently defining deforestation and forest poverty, the author

explores various institutional policy and institutional responses. There is an interesting section on tapping into the market for carbon sequestration through avoided deforestation (chapter 7).

- ***A Short Guide to Sustainable Agriculture***. Sustainable Agriculture Initiative. 2009. http://www.saiplatform.org/uploads/Library/short_guide_to_sa_-_final[1].pdf

  This brief document provides an overview of sustainable agriculture, highlighting the main environmental issues which need to be addressed by companies working in the food sector. It contains several case studies presenting examples of sustainable agriculture in practice, as implemented by several leading global companies (Nestle, Kraft, Unilever, etc.)

- ***Smallholder Agriculture and the Environment in a Changing Global Context***. Cook, J.A. 2009. WWF MPO http://assets.panda.org/downloads/wwf_mpo_smallholder_ag_policy_brief.pdf

  This policy brief offers insights from a WWF project implemented in Southern Africa and Southeast Asia. It denounces the lack of attention and support which smallholder agriculturalists suffer from, and presents the new context as one of volatile food prices, increased food insecurity, more widespread large scale land acquisitions, increased demand for biofuels, and climate change. Author states that "*simply focusing on increased agricultural productivity, as many donors are now doing, will be inadequate if it avoids critical institutional, governance, and capacity issues which exacerbate vulnerability and constrain outcomes on the ground*." The author makes the case that smallholders have an important to role in ensuring food security in the decades to come.

- ***The Global Initiative on Commodities - From Stakeholder Perspectives to Stakeholder Participation***. IISD. 2009. http://www.iisd.org/pdf/2009/global_initiative_commodities.pdf

  This paper offers a summary of recommendations formulated by civil society organizations on priority areas for stimulating pro-development commodity-orientated strategies at the international level. Some of the recommendations include support for South-South trade, access to high-value markets, and the strengthening of local producer organizations. The civil society organizations call for the establishment of a new global partnership for the promotion of sustainable commodity production and trade.

- ***Supermarket Buying Power - Global Supply Chains and Smallholder Farmers***. Brown and Sander. 2007. IISD http://www.tradeknowledgenetwork.net/pdf/tkn_supermarket.pdf

  "*This paper is about the impact of the supermarkets' increased market power on global supply chains and what this means for smallholder farmers in the developing world trying to sell their produce to the potentially lucrative markets of the developed world."* The paper outlines 4 potential strategies for increasing international food market access for smallhoders: cooperatives; outgrower schemes; public-private initiatives; and regional initiatives.

- ***The Governance of Rural Land in a Liberalized World***. Hodge, 2007. Journal of Agricultural Economics. 28 (3): 409-432. http://onlinelibrary.wiley.com/doi/10.1111/j.1477-9552.2007.00124.x/abstract

  This paper discusses the merits of adaptive co-management in the context of increased liberalization of the agricultural sector, which he expects will free-up land use decisions in rural communities. The author states that such an approach has the merit of "*challenging the conceptualization of the role of government in terms of the provision of public goods*", and he advocates for "*less reliance on economic valuation methods and more emphasis on an institutional framework where values can be determined and policies implemented at a relatively local scale*."

Some related links

- http://www.ecoagriculturepartners.org - Ecoagriculture Partners
- http://www.rainforest-alliance.org/ - The Rainforest Alliance
- http://www.grain.org/front/ - GRAIN
- http://www.saiplatform.org/ - Sustainable Agriculture Initiative

Finance & Insurance

It has been argued that the main missing 'link' in the transition to a green economy is 'green finance' (Gao, 2009).

- ***Green Finance for Green Industry and Green Economy***. Speech by Victor Gao at the International Conference on Green Industry in Asia, September 2009.

http://www.unido.org/fileadmin/user_media/UNIDO_Header_Site/Subsites/Green_Industry_Asia_Conference__Maanila_/Gao_pres.pdf

"*All green industrial propositions cost money, and many green industry business models are more often than not untested or unconventional. Therefore, traditional finance may find it difficult or commercially unattractive to finance these green industrial propositions. Therefore, despite of all the eloquent public statements and pronouncements, it will be difficult, if not impossible, to transit to green industry without 'green finance'*". The speaker notably calls for the creation of an International Green Finance Association to facilitate the transition to a green economy.

- ***Green Investing 2010 – Policy Mechanisms to Bridge Financing Gap***. World Economic Forum, 2010. http://www.weforum.org/pdf/climate/greeninvesting2010.pdf

  "*In this report, we provide an update on the status of investment volumes in clean energy and an overview of the different technologies that will contribute significantly to a future low-carbon energy infrastructure, as well as the key enablers that are required in order to allow those technologies to get to scale. We also highlight developments in the carbon markets and global negotiations (in Copenhagen and beyond) which affect clean energy and greenhouse gas emissions as a whole. Finally, we provide an analytical framework to evaluate 35 different types of policy mechanisms designed to unleash private capital to facilitate the shift to a low-carbon economy*."

- ***IISD Model International Agreement on Investment for Sustainable Development***. IISD, 2006. http://www.fes-globalization.org/dog_publications/Appendix%202%20IISD%20Model.pdf

  This paper proposes a new model for assessing international investment agreements. The model provides an agenda for future negotiations as well as a consistent view of the linkages between investment and sustainable development. The paper is intended to target negotiators, especially from developing countries. It is presented as an annotated version of the text of a proposed Agreement on international investment.

- ***The Global State of Sustainable Insurance - Understanding and Integrating Environmental, Social, and Governance Factors in Insurance***. UNEP FI 2010. https://www.allianz.com/static-resources/en/responsibility/media/documents/global-state-of-sustainable-insurance.pdf

This report compiles the findings of a broad survey of the insurance sector. It makes the case for an enhanced role of the insurance sector in understanding the rapidly changing risk landscape and leading the transition towards a greener world economy.

- ***On the Frontiers of Finance: Scaling up Investments in Sustainable Small and Medium Enterprises in Developing Countries***. Barreiro et al. WRI. 2009. (Barreiro et al 2009.pdf)

  This paper provides "*an overview of the current landscape, lending practices, and principal challenges of financial intermediaries providing capital to sustainable SMEs in developing countries. The objective is to help stimulate greater and more effective sustainable SME investment by better understanding how the sector can best be supported and expanded*". Three main recommendations are formulated: improve capital allocation; promote financial innovation, and capture the triple bottom line.

Due notably to its contribution to the regulation of ecosystem functions; biodiversity is often recognized for its role in serving as a natural form of ***insurance*** against disturbances and natural disasters. In an increasingly unpredictable climate, investments in biodiversity could become an important means of reducing and managing risk.

- ***The Insurance Value of Biodiversity in the Provision of Ecosystem Services***. Baumgartner, 2006. Available at SSRN: http://ssm.com/abstract=892105

  This paper builds on the notion of resilience and on the findings of Hooper et al (2005) to analyze the role of biodiversity as a natural form of insurance, whose value is directly comparable to the value of financial insurance. The paper concludes that biodiversity does indeed "*act as a form of natural insurance for risk-averse ecosystem managers against the over- or under-provision with ecosystem services*".

- ***Reserves, Resilience and Dynamic Landscapes***. Bengtsson, J,. et al. 2003. AMBIO A Journal of the Human Environment, Volume 32, Issue 6: 389-396.

  http://ambio.allenpress.com/perlserv/?request=get-abstract&doi=10.1639%2F0044-7447(2003)032%5B0389%3ARRADL%5D2.0.CO%3B2&ct=1

  This paper specifically addresses the insurance value of biodiversity. It argues that "*for ecosystems to reorganize after large-scale natural and human-induced disturbances, spatial*

resilience in the form of ecological memory is a prerequisite". It describes an innovative approach to ecosystem management which aims towards building resilience by considering dynamic as opposed to static nature reserves.

- ***Biodiversity and Ecosystem Services: Bloom or Bust?*** A document of the UNEP FI Biodiversity & Ecosystem Services Work Stream**.** UNEP FI. 2008. http://www.bancaeambiente.org/pdf/wokshop1/Riscos%20no%20Ecossistema_UNEP%20FI.pdf

  This report presents the biodiversity business case as it relates to the financial sector - highlighting areas of risk and opportunity. Different procedures and tools for managing biodiversity risk are detailed, such as EIAs and biodiversity action plans. Opportunities detailed include the creation of new financial products and investments (e.g. PES) and differentiation through branding. The annex includes a sectoral overview of biodiversity risks.

Obviously, ***climate change*** represents a major source of risk which the finance and insurance sectors are increasingly starting to address.

- ***Investing in Climate Change 2010 - A Strategic Asset Allocation Perspective***. Deutsche Bank. http://www.banking-on-green.com/docs/InvestingInClimateChange2010.pdf

  Written in the aftermath of the COP15 meeting in Copenhagen, this report reviews the climate change theme from an investor's point of view. The analysis demonstrates that "*on a historical basis, the inclusion of climate change sectors in a portfolio improves expected returns. At a sector level, we have not made any specific tilt towards the four major sectors of clean energy, energy efficiency, water, or agribusiness. In the long run, we believe that all these sectors are attractive.*"

- ***World Investment Report 2010 – Investing in a Low Carbon Economy***. UNCTAD, 2010. http://www.unctad.org/Templates/WebFlyer.asp?intItemID=5536&lang=1

  This report, of which only a summary overview is freely available online, presents and discusses recent trends in foreign direct investment worldwide. It is stated that: "*Global initiatives, such as investment in agriculture, global financial systems reform, and climate change mitigation are increasingly having a direct impact on investment policies*". The report notably calls for a new

'investment-development paradigm' as well as a sound investment regime that is more supportive of sustainable development.

- ***A Warming World Means More Destructive Storms***, Book Bytes from Lester Brown's 'Plan B 4.0', 2008.http://www.earthpolicy.org/index.php?/book_bytes/2008/pb3ch03_ss6

  This brief article recaps some of the main points articulated in Lester Brown's book: Plan B 4.0: Mobilizing to Save Civilization. It highlights the huge potential costs of climate change to the reinsurance industry and shows how they pale in comparison to the costs of reducing greenhouse gas emissions. Simply put: "*If we allow the climate to spin out of our control, we risk huge financial costs*."

Some related links

- http://www.unepfi.org/ - the UN Finance Initiative
- http://www.gabv.org/ - Global Alliance for Banking on Values

Mining & Construction

The greening of the economy needs to involve all sectors of economic activity, including those whose business it is to extract natural resources from the environment. As a large-footprint industry sector, it is particularly essential that companies operating in mining and construction become increasingly engaged in conservation.

- ***Good Practice for Mining and Biodiversity***. ICMM, 2006.
  http://www.cbd.int/development/doc/Minining-and-Biodiversity.pdf

  This comprehensive report highlights the significance and importance of biodiversity and provides basic guidance for mitigating impacts during the different operational stages of the mining industry (exploration, construction, closure). It also presents the different tools and processes that can be used by the industry (environmental and social impact assessments, environmental management systems, stakeholder engagement, mitigation, etc.).

- ***Buildings and Climate Change - Status, Challenges and Opportunities.*** UNEP, 2007.
  http://smap.ew.eea.europa.eu/media_server/files/R/S/UNEP_Buildings_and_climate_change.pdf

This report explores the role of buildings in climate change, which consume 30-40% of global energy use. It is mainly articulated around the detailing of different opportunities for enhancing energy efficiency (low-energy buildings; eco-cities; life-cycle performance; tech transfer; incentives, etc.).

- ***Material Flow Analysis in the Aluminum Industry***. Bertram et al., 2009. Yale Journal of Industrial Ecology. http://www3.interscience.wiley.com/cgi-bin/fulltext/122616541/PDFSTART

  This article offers an overview of the flows of aluminum at the global scale, based on a material flow analysis model. To the industry, these models are seen to be most useful tools for communicating, lobbying, closing data gaps, and developing business strategies.

Some related links

- http://www.icmm.com/ - the International Council on Mining and Metals
- www.ciria.org – Construction Industry Research and Information Association

Tourism

The tourism industry is highly dependent on nature. Many operations capitalize directly on their proximity to pristine landscapes and wildlife. With such an important stake in preserving ecosystems, the tourism industry – which is considered the largest industry in the world, could play a significant role in the transition to a green economy, notably by generating sustainable sources of employment (UNWTO, 2009).

- ***Roadmap for Recovery –Tourism and Travel: A Preliminary Vehicle for Job Creation and Economic Recovery***. UNWTO, 2009. http://www.unwto.org/conferences/ga/en/pdf/18_08.pdf

  This document includes a set of 15 recommendations aimed at supporting the tourism sector and the green of the economy. They are articulated around the three themes of: resilience, stimulus, and the green economy. The main point made throughout is that the tourism can help create sustainable jobs and thus support the transition to a green economy.

- ***Guidelines on Biodiversity and Tourism Development***. CBD, 2004. http://www.cbd.int/doc/publications/tou-gdl-en.pdf

"*The main thrust of the guidelines is that tourism management should be based on a consultative process involving multi-stakeholder participation and should consist of ten steps, including: the development of an overall vision for the sustainable development of tourism activities; the setting of short-terms objectives to implement the vision; the review and building of regulations and tourism standards; the assessment of the potential impacts of tourism projects; the monitoring of impacts and compliance; and the implementation of adaptive management in relation to tourism and biodiversity*."

- ***Biodiversity: My Hotel in Action – A Guidebook to Sustainable Use of Biological Resources***. IUCN, 2008. http://cmsdata.iucn.org/downloads/iucn_hotel_guide_final.pdf

  This guidebook highlights the relevance of biodiversity to hotels and provides guidance for action in various parts of the industry (giftshops, restaurants, rooms, grouds, etc.). It contains a section on specific wildlife species that need particular attention in relation to procurement and use.

Some related links

- http://www.unwto.org/index.php - The World Tourism Organization
- http://www.sustainabletourism.net/ - Sustainable Tourism

Additional Areas of Interest

This final section of the guidebook is intended to highlight additional issues that could potentially serve as areas worthy of thematic focus in the context of a coordinated effort to green the world economy.

Land-Use Planning & Urbanization

- ***Ecosystem Services: Foundations for a New Rural-Urban Compact***. Gutman, 2007. WWF. http://www.sciencedirect.com/science/article/B6VDY-4NF2HH2-6/2/6f4ece841ccafff17b81d1e317d237a3

  This paper describes how rural populations have become marginalized and how a new urban-rural compact is necessary to keep on feeding the world while sustaining vital ecosystem services. The short paper concludes by outlining the main hurdles to the further development of this compact, notably the lack of demand, the lack of existing institutions, and the need for a more labor-intensive conservation model.

- ***Urban Resilience Research Prospectus – A Resilience Alliance Initiative for Transitioning Urban Systems towards Sustainable Futures***. Resilience Alliance, 2007. http://www.resalliance.org/files/1172764197_urbanresilienceresearchprospectusv7feb07.pdf

  This paper outlines a new research area on urban sustainability, intended to help urban managers face urgent challenges of growing urbanization. Within the 'resilience framework' this approach to analyzing the sustainability of urbanization integrates metabolic flows (supply chains), governance networks (institutional structures and organizations), social dynamics (demographics, human capital and inequity), and the built environment (ecosystem services in urban landscapes). It also outlines a variety of research questions for each of these 4 themes.

- ***Transition Initiatives Primer – becoming a transition town, city, district, village, community, or even island***. Brangwyn and Hopkins. 2010. http://www.transitionnetwork.org/sites/default/files/TransitionInitiativesPrimer(3).pdf

  This document introduces the concept of 'transition towns', explaining why they are necessary (climate change and peak oil) and presenting a model for transitioning to a low-carbon

economy. It offers an overview of a case study in the UK, and provides some criteria for towns wishing to embark on the transition towards a low energy future.

Some related links

- http://www.iclei.org/ - Local Governments for Sustainability
- http://www.globallandproject.org/index.shtml - The Global Land Project

Consumption

- ***Redesigning Business Value: A Roadmap for Sustainable Consumption***. World Economic Forum. January, 2010. http://www.weforum.org/pdf/sustainableconsumption/DrivingSustainableConsumptionreport.pdf

  This report outlines the case for changing current patterns of consumption, including considerations on the meaning of prosperity and value: "*Despite the recession, moves towards sustainability are accelerating, supported by a shifting consumer agenda, the rise of sustainable investment, increasingly supportive policy frameworks nationally and internationally, and attempts to redefine concepts of value and prosperity, incorporating environmental and other values.*" It then considers the way forward, calling for "*a "new normal", bringing about systemic change in consumption, production and the way in which value is created*". Emphasis is placed on concepts such as 'shared value' and closed-loop consumption/production systems. The report concludes with some concrete suggestions for making the required change happen.

- ***Carbon Currencies - A New Gold Standard for Sustainable Consumption?*** G. Seyfang. CSERGE. http://www.uea.ac.uk/env/cserge/pub/wp/edm/edm_2009_07.htm

  This paper reviews experience with complementary currencies in the perspective of a proposed personal carbon trading system for the UK.

- ***Sustainable Consumption and the New Economics: Exploring an Alternative Approach***. G. Seyfang. CSERGE http://www.uea.ac.uk/env/cserge/pub/wp/ecm/ecm_2007_05.htm

  This paper presents the New Economics body of thought, which is founded on four key elements: new conception of *wealth*; broader definition of *work*; new uses of *money*; and

reintegrating *ethics* into economic life. This paper explores the practical implications of this theoretical framework by analyzing the feasibility of establishing 'time banks' which uses time as money to reward community engagement and build social capital.

Some related links

- http://www.scp-centre.org/ - Centre on Sustainable Consumption and Production

Ecosystem Restoration

- ***Dead Planet, Living Planet – Biodiversity and Ecosystem Restoration for Sustainable Development***. UNEP, 2010. http://www.grida.no/_res/site/file/publications/dead-planet/RRAecosystems_screen.pdf

  This document argues that the restoration of ecosystems can be a cost-effective way of preserving and capitalizing on the economic values of biodiversity: "*Well planned, appropriate restoration, compared to loss of ecosystem services, may provide benefit/cost ratios of 3–75 in return of investments and an internal rate of return of 7–79%, depending on the ecosystem restored and its economic context, thus providing in many cases some of the most profitable public investments including generation of jobs directly and indirectly related to an improved environment and health. Ecological restoration can further act as an engine of economy and a source of green employment*."

- ***The SER International Primer on Ecological Restoration***. SER International, 2004. http://www.ser.org/pdf/primer3.pdf

  This brief document presents a succinct overview of ecological restoration, providing guidance to the effective design and implementation of restoration projects. It contains a glossary of relevant terms.

Some related links

- http://www.globalrestorationnetwork.org/ - Global Restoration Network
- http://www.ideastransformlandscapes.org/ - The Global Partnership on Forest Landscape Restoration