

Real-world-economics-bibliography

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0.0.1 (Arrow et al. 1995)

- **HIGHLIGHTED PUBLICATION**
- Economic growth, carrying capacity, and the environment, Science, 1995 (Arrow et al. 1995)
 - Outlines the origin and current evidence for the Environmental Kuznets Curve (EKC)
 - Asko meeting report

0.0.2 (Arrow et al. 2004)

- Are we consuming too much (Arrow et al. 2004)
- Journal of Economic Perspectives

0.0.3 (Berkes 2007)

- Title: **Community-based conservation in a globalized world**
- **Economic perspective**
- Integrating conservation and (social and economic) development.
 - I.e. preserving the natural basis while developing.
- Quote: “*community-based conservation as a panacea, like government-based conservation as a panacea, ignores the necessity of **managing commons at multiple levels, with vertical and horizontal interplay among institutions***”
- Quote: “*Improving the **integration of conservation and development requires** rethinking conservation by using a complexity perspective and the ability to deal with multiple objectives, use of partnerships and deliberative processes, and learning from commons research to develop diagnostic tools.*”
- Quote: “*The shift of attention to processes at multiple levels fundamentally alters the way in which the governance of conservation development may be conceived and developed, using diagnostics within a pluralistic framework rather than a blueprint approach.*”

0.0.4 (J. H. Brown et al. 2014)

- Malthusian vs. Darwinian dynamics (i.e. growth and resource limitation vs. organic and cultural selection for innovation to circumvent those)
 - Malthusians [population, resource limitation and conflict] vs. Cornucopians [technological innovation to facilitate eternal growth]
 - (Hall and Day 2014) call Malthusians - *resource constraintists* i guess the difference is in whether population or finite resources is seen as the ultimate causal agent.
-

0.0.5 (Cash et al. 2003)

- Title: **Knowledge systems for sustainable development**
 - **how to create institutions that effectively harness S&T for sustainability**
 - **Economic perspective**
 - Applies an institutional perspective to the mediation of science & technology for sustainable development.
 - Quote: “*Many believe that science and technology (S&T) must play a more central role in sustainable development, yet little systematic scholarship exists on how to create institutions that effectively harness S&T for sustainability.*”
 - Quote: “*This study suggests that efforts to mobilize S&T for sustainability are more likely to be effective when they manage boundaries between knowledge and action in ways that simultaneously enhance the salience, credibility, and legitimacy of the information they produce.*”
 - Quote: “*Effective systems apply a variety of institutional mechanisms that facilitate communication, translation and mediation across boundaries.*”
-

0.0.6 (S. Chen and Ravallion 2007)

- **Absolute poverty measures for the developing world, 1981-2004**
 - **Economic perspective:**
 - Macroeconomic perspective on monetary poverty globally and in the global regions.
 - Trends in population of poor as defined by monetary income. * Not addressing multidimensional poverty (e.g. sensu UNDP) which may be an important avenue for sustainability science.
 - Decline in proportion of world population under absolute poverty from 1981 to 2004.
 - Total number of poor is stable or increasing (notably in sub-Saharan Africa).
 - Finds urbanization of poverty - increasingly poor people are living in the city with incomes defined as poverty.
-

0.0.7 (Collier 2007)

- **Poverty reduction in Africa**

- **Referencing use**

- Resource curse (and ethnical diversity, Botswana as a counter case study - it is an outlier in Africa)
- Resource efficiency (challenge of turning resources into personal income in resource rich and ethnically diverse countries)
- Real-world economics (perspectives on economic growth and poverty)
- Characterization of African economies and case studies

- **Efficiency perspective**

- **Resource curse**

- Quote: *“Africa’s current economic opportunity is its natural resource rents. A disproportionate share of Africa’s population lives in resource-rich countries, and for the foreseeable future commodity prices are going to be high with discoveries skewed toward the region.”*
- Quote: *“It seems that the typical resource-rich country might grow faster under autocracy. However, as set out in Human Geography, Africa’s high ethnic diversity makes autocracy damaging: Africa’s resource-rich countries may not have the option of growth through autocracy.”*
- Quote: *“The form of polity that appears to be best suited to ethnically diverse societies with resource rents is a democracy with unusually strong checks and balances and decentralized public spending. How the government can use power needs to be constrained, rather than simply how it attains power. **Botswana** demonstrates both that this combination is possible in Africa and that it is effective in delivering development in resource-rich societies.”*
- Quote: *“Resource-rich societies face a further difficulty during export booms. Globally, during these booms the pace of policy reform slows (18). Hence, societies that have painfully realized that rapid reform is necessary, such as has been the case in **Nigeria** since 2003, may find that boom conditions remove the sense of urgency from the reform agenda and divert political attention to the contest for spending. Thus, the very conditions in which good policies have their highest pay-off tend to undermine the political process of achieving them.”*

- **Economic perspective**

- Macroeconomic perspective on monetary poverty in Africa.
- The article concludes that the main approach to decreasing poverty should be to grow the economy (in terms of GDP).
- This reveals part of the dichotomies still apparent in sustainability science between researchers grounded in development economics and geography on one hand and the core of sustainability science, ecosystem services and ecology on the other.
- Underlying cause: Africa’s economies have not been growing (in terms of GDP).
 - * A role of sustainability science has been to open up the discussion on new measures of (economic) growth.
 - * They seem not to be integrated in this article from 2007, thus there is still need for further activity, here.
- International interventions beyond aid to bring Africa out of poverty
 1. International society must set out templates for transparent economies (including industry and banking).
 2. International action to give resource-scarce African countries preferential market access.

- 3. Expand international peacekeeping to prevent internal conflict.
- Overarching resource problem for Africa
 - * Quote *The fourth, and perhaps least tractable problem, is that so much of Africa's population lives in landlocked, resource-scarce states. I have discussed how, because these states have multiple forms of dependency on neighbors, Africa needs a strong regional political architecture that can internalize these externalities.*
 - * Quote *Long-term aid, while targeted toward low-income countries, is currently intended to raise income. The international community has not yet faced the prospect that even with our best efforts these societies are likely to remain low income for a long time.*

0.0.8 (Cowling et al. 2008)

- **An operational model for mainstreaming ecosystem services for implementation**
- Conclusion: “At the core of our operational model are three elements: socially relevant, user-inspired research, stakeholder empowerment, and adaptive management embedded in learning organizations. The goal is the achievement of social and ecological resilience in an uncertain world.”
- **Referencing use**
 - Can be cited to support claim that parts of sustainability science, namely ecosystem service research, has been socially naive.
 - Can be cited to support claim that ecosystem service research has mainly focused on valuation.
 - Sustainability science’ role as integrator disciplines, including in principle, finance
 - * *“The activities prescribed by the model will not be easy to implement. Socially engaged, multi- and interdisciplinary re- search is relatively rare. Our process requires a fundamental change, or transformation, in the way research generates knowl- edge (3, 4). Researchers will need to be responsive to stake- holder needs, collaborate with many groups with values and norms foreign to their own, operate as facilitators of knowledge transfer to stakeholders, and be prepared to engage time- consuming processes that are not sympathetic to career aspira- tions and performance benchmarks predicated by the accumu- lation of publications in high-impact journals (7, 90). Moreover, the education philosophies of almost all universities are not conducive to multi- and interdisciplinary research; instead, they encourage the atomization of disciplines and entrench the boundaries between them (4, 58, 91). However, the recent emergence of sustainability science (11) is a very positive development. The operational model presented here provides many opportunities for conducting research on the complex problems inherent in managing social-ecological systems. Rec- ognition of the importance of this research through enhanced funding and status can provide the impetus for its growth.”*
- **Economic perspective**
 - Most ecosystem service research has focused on valuation and is not embedded in a social process.
 - Criticizes focus on monetary valuation. I.e. there are many services where a common monetary currency may not make sense.
 - Criticizes modus operandi of economic donor organizations in developing countries, which are focused on short term outcomes.
 - Talks about consumerist economic paradigm and high discounting rates of future events.

0.0.9 (G. C. Daily and Matson 2008)

- Title: **Ecosystem services: from theory to implementation** (special feature introduction)
- **Aim:** *contributions that span the fundamental science of ecosystem services through to the **design, implementation, and assessment of finance and policy mechanisms and systems of governance***
- Quote: “Around the world, leaders are increasingly recognizing ecosystems as natural capital assets that supply life-support services of tremendous value.”
- Quote: “The challenge is to turn this recognition into incentives and institutions that will guide wise investments in natural capital, on a large scale.”
- Quote - para 1: “*Even in the face of intensifying pressures and risks on the global environmental front, there is a growing feeling of Renaissance in the conservation community. This flows from the promise in reaching, together with a much more diverse and powerful set of leaders than in the past, for new approaches that align economic forces with conservation, and that explicitly link human and environmental well-being (1). And this promise is flowering thanks to substantial recent advances in key areas of inquiry, such as ecology, economics, and institutions, and their integration (2-5).*”
- **Economic perspective**
 - Incentives and institutions for (economic) investments in natural capital.
 - Design, implementation, and assessment of finance and policy mechanisms and systems of governance
 - Three advances are required:
 1. the science of ecosystem production functions and service mapping (Naidoo et al. 2008)
 2. the **design of appropriate finance**, policy, and governance systems (Tallis et al. 2008)
 3. the art of implementing these (systems) in diverse biophysical and social contexts

0.0.10 (Golub et al. 2012)

- **Global climate policy impacts on livestock, land use, livelihoods, and food security.**
- Explores the potential spatial impact of climate change mitigation policies on food production in Annex 1 countries in non-Annex 1 countries.
- In particular, leakage of land use activities into non-Annex 1 countries are explored and resulting GHG emissions
- **Economic aspect** Spatial ecological impact of policies targeting agricultural economic activities.

0.0.11 (Hall and Day 2014)

- ***Title:** “Why aren’t contemporary ecologists and economists addressing resource and energy scarcity: The major problems of the 21st century”
- **Focus:** Peak oil and industrial civilization (i.e. energy-intensive, capitalist, growth-oriented, market-driven originally developed in the West).
- **Referencing use:**
 1. Industrial civilization paradigm of the West as the economic paradigm that has led to high levels of resource use intensities.
 2. Sustainability-oriented research has not addressed issues of population, energy and key resources (e.g. metals).
 3. Resource issues emerged due to growth in the population and in the economy.
 4. Sustainability science - blind spots in the natural sciences.
 - All too often the idea of sustainability is conflated with the idea of “green”
 - Sustainability science does not deal with the growth paradigm and the energy intensive society
 - (J. R. Burger et al. 2012) Burger et al 2012 found that sustainability research (23,535 published papers) more commonly used words like “development” and “economics” than “ecology” and “ecological” and even less often “thermodynamic” & “steady state”.
 5. Important to remain open about economic paradigms since “the success of the neo-classical economic paradigm may have been conflated with the access to large amount of high quality energy resources and metals”. E.g. (paraphrasing) even communism in the 70’s under high degree of resource access looked to be an economically viable strategy.
 6. Research question: Is neoclassical economics able to deal with issues of resource scarcity and population and in particular degradation of natural systems.
 - Gowdy et al. 2004: This is due to a misassessment of the role of nature in the economy
 - * Externalization of pollution effects
 - * Characterizing depletion of resources as current income
 - * Assuming that natural capital, social (i.e. human) capital, and financial capital are absolute substitutes for one another.
- **Intro**
- Asks question: Why aren’t contemporary ecologists and economists addressing energy and resource scarcity
- Claims: Energy and resource scarcity are “the major problems of the 21st century”
- Intractable problems are caused by - population, resource scarcity, impact economy
 - PSJ: Couldn’t this be flipped on its head - the economic system is causing resource scarcity?
- Problems already identified in the 1950s, 60s, 70s
 - Scarcity of cheap high-quality energy
- The crux: THESE PROBLEMS ARE FUNDAMENTALLY ECOLOGICAL AS THEY HAVE TO DO WITH RELATION BETWEEN AN ORGANISM AND ITS ESSENTIAL RESOURCES
- Observation (unreferenced): Ecologists rarely address resource scarcity in a human context
- **Mentors/pioneers**

- Scholars that pioneered resource scarcity work:
 - US ecologists - Garrett Hardin, Paul Ehrlich, Eugene Odum and Howard Odum, David Pimentel, Kenneth Watt
 - US economists - Kenneth Boulding, Herman Daly
 - US computer scientists - Jay Forrester, Dennis Meadows, Donella Meadows
- Question: Has technology and market economics solved and invalidated the specific and general predictions of the limits to growth model?
- **After a period of much attention, the issue of humans and global resources disappeared from most teaching, research and public discourse - ESPECIALLY IN ECOLOGY WAS THIS PERVASIVE**
 - Claim: Ecologists today are rarely concerned with global resource scarcity and are often unaware of global resource issues.
 - Claim (referenced): There has been a movement to marginalize population growth
 - Bartlett 1998 - Social Contract - The massive movement to marginalize the modern Malthusian message
 - Claim: Failure of contemporary thinkers including “sustainability” researchers to address energy (oil), resources (metals) and population.
 - This Failure will be known to future generations as “grand folly”
- *Resource constraintist* (Malthusian) references to check out:
 - HT Odum, “Environment, Power and Society” (1971)
 - * Ecological laws and laws of energy apply to ALL organisms
 - Meadows “Limits to Growth” (1972)
 - * Decline in quality of life and even population size
 - Hubbert “Energy resources” in “Resources and man” (1969)
 - * Peak US (conventional) oil production in 1970
 - * Global peak conventional oil production in 2000s (first decade of 21st century)
- **Resource issues up until early 1970’s**
- Malthus 1778 considered the first to raise the issue of resource constraints
 - The failure of his prediction due to discovery of oil and application to agriculture which allowed food production to follow with population growth.
 - It could be argued that this observations is consistent with the human ingenuity, resource substitution and technological innovation argument of *Cornucopians*
- **Increasing, then waning interest in resource constraints**
- Oil crisis of the seventies sparked interest in issues of resource constraints
- US started importing oil from the Middle East in the 1980’s in response to oil shortages.
 - “Economists became leaders in addressing resource issues”
- **Turning away from constraintist issues**
- Observation (unreferenced): In the 1970’s and 1980’s ecology turned away from human issues and focused on natural populations, communities, ecosystems.

- PSJ: This must have been a big line and focus of research before. So it was a similarly dynamics seen in economics where a mainstreaming and decrease in diversity of issues and methods took place.
- As the population and economy grew, a number of resource issues emerged.
 - Depletion of highest quality fuels
 - The intellectual bankruptcy of conventional neoclassical economics and its inability to resolve or even understand the issues of depletion
 - Degradation of natural systems
 - Loss of goods and services from natural systems
 - Climate change
 - (Unsustainable population growth)
- **Issues with neo-classical economics**
- **Why are ecology and economics not addressing these problems?**
- Not because *constrainists* were wrong or because their work was not well-known.
- Neo-classical economics in becoming the dominant paradigm in political economy has decreased the role of resource issues in decision making
- Ecologists are no longer trained to think that resource constraints are important or within their purview
 - Increasing academic specialization is leading to increasing academic fragmentation
 - Ecologists have taken up residence in biology departments
 - * Ecologists should be among the most integrative and interdisciplinary of scientists.
 - * The tenure system discourages young faculty from taking on broad, systems oriented problems.
 - * Similar things can be said about funding agencies.
 - * Resource and population problems do not fit comfortably within any academic discipline.
- The publications that are available are generally in the form of books directed toward broad audiences
 - Mainstream scientific publications about these issues remain rare.

0.0.12 (Herrero et al. 2013)

- **Biomass use, production, feed efficiencies, and greenhouse gas emissions from global livestock systems**
- **Efficiency perspective** “feed efficiency as a key driver of productivity, resource use, and greenhouse gas emission intensities, with vast differences between production systems and animal products”
- **Economic perspective** Economic impact of livestock production.

0.0.13 (Hyden 2007)

- **Governance and poverty reduction in Africa**
- Quote: *“prevailing assumptions in the international development policy community about improved governance as a principal mechanism to reduce poverty in Africa rests more on faith than science”*
- **Economic perspective:**
- Poverty reduction mechanisms
- Important citation - current economic models do not account for large swath of poor that are outside the market (informal economy). **The informal economy may be an area that sustainability science has done well in tackling, but to make an impact it seems it needs integration with existing economic models.** Thus both groups have to approach each other.
- Diverging views between social scientists and economists on governance (in poverty reduction context)
 - * If sustainability science currently reflects views of one of these groups more, then that emphasizes the need for integrating the two in sustainability science, thus a need for integrating economics as well as other social sciences further.
- *“Conventional policy models for tackling poverty fail to take into account the peculiar socioeconomic and political conditions in Africa, where the vast majority of those living on one dollar a day or less are only marginally captured by market and state institutions and instead rely on solving their problems “outside the system.”*
- *“Economists continue to dominate the international development policy agenda. Another is that political scientists have typically looked at how economic variables shape political ones, rather than the other way around, as implied in the current governance agenda”*
- Has sustainability science done better at integrating political science (or *vice versa*) than economics?

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0.0.14 (Robert W Kates and Dasgupta 2007)

- **African poverty: A grand challenge for sustainability science**
- *Introduction to special issue on poverty reduction*
 - all developing country regions have shown marked improvement in key indicators of poverty, health, economy, and food, except for sub-Saharan Africa
 - Quote: *“Three major collective findings stand out: place matters, cause is complicated, and experimentation is necessary”*
- **African exceptionalism**
 - Quote: *“Our own assessment is that geopolitics, poverty, governance, and geography all contribute to African exceptionalism, although their respective importance varies by region, country, and place. We”*
 - Quote: *“However, the research reported here, together with other recent findings in a similar vein, is far more nuanced than previous efforts that simply or singly blamed history, geography, culture, or the industrialized North.”*
- The need to move beyond panaceas

- Quote: “A similar emphasis on the importance of context in understanding causation in human-environment systems is central to the PNAS special feature on the need to move beyond panaceas” in the governance of natural resource systems, published earlier this year under the leadership of Elinor Ostrom (22).“*
- Quote: “Collier’s research (3) identifies four sets of policies that international and regional institutions might undertake, guided by his framework of major geographic differences. **Resource-rich countries with high ethnic diversity** especially need to have strong checks and balances on how governments use their power and distribute funding. International policies on transparency and financial disclosure can help. Such countries are also prone to violent internal conflicts and expanding international and regional peacekeeping, and security guarantees could help. **Resource-scarce coastal countries** that have missed the opportunities to develop Asian-style export-based manufacturing will require temporary preferential market access. Finally, **countries that are both resource-scarce and landlocked** have the least opportunity for growth. They will need substantial foreign aid, not for fostering economic growth but for direct provision and consumption of basic necessities.”

- **Sustainability science in PNAS**

- Quote: “This is one of several inaugural special features in the Sustainability Science section of PNAS (23).”
- Quote: “this special feature is sustainability science, but still in early development.”
- Quote: “It is an exemplar of sustainability science because it tackles a big problem (in current jargon, a grand challenge). In our judgment, it is a challenge rivaled in our time perhaps only by climate change and peace and security.*”
- Quote: “It illustrates sustainability science because it is clearly interdisciplinary, with lead authors and editors from economics, geography, political science, and soil science. It”
- **Lacks** “Although interdisciplinary overall as a special feature, some of our articles nonetheless overly reflect their disciplinary origins. The transdisciplinary goal of fully integrating the natural and social sciences and of using truly socioecological models is not realized. Major contributions from technology and the health sciences are absent but should be forthcoming in other special features. And, as in previous work, our special feature remains stronger on critical analysis than on offering practical and place-based solutions.”

0.0.15 (R. W. Kates, Travis, and Wilbanks 2012)

- **Transformational adaptation when incremental adaptations to climate change are insufficient**
- **Outlier / first mover perspective** Importance of transformational change and of having examples of transformations. Importance of initiating research into transformations (as e.g. through macroecological studies to identify outliers for further study).

0.0.16 (Lenzen et al. 2012)

- “Our findings clearly demonstrate that local threats to species are driven by economic activity and consumer demand across the world.”

0.0.17 (Lewis et al. 2011)

- Title: **Community Markets for Conservation (COMACO) links biodiversity conservation with sustainable improvements in livelihoods and food production**
- **Economic perspective:**
 - (Small-scale-)business-oriented economic strategies for sustainable natural resource use and poverty alleviation.
 - Business oriented strategy as opposed to national governmental strategy.
 - *Observation:* Economic strategies to cope with poverty at household and larger scales have led to natural resource degradation that limits future economic opportunities.
 - COMACO model is a strategy to achieve goal of sustainable development including conservation of wildlife.
 - These findings describe a “unique” business-oriented model for poverty alleviation, food production and biodiversity conservation.

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0.0.18 (Liu et al. 2008)

- Title: **Ecological and socioeconomic effects of China’s policies for ecosystem services**
- **Economic perspective**
- Payment for ecosystem services (PES)
 - **Bright spot** The most populous country in the world has initiated multiple large PES schemes.
- “*China has been implementing a number of national policies on payments for ecosystem services*”
 - These programs are among the biggest in the world - “... because of their ambitious goals, massive scales, huge payments, and potentially enormous impacts”
 - e.g. Natural Forest Conservation Program (NFCP), Grain to Green program (GTGP)
 - “*The **NFCP** conserves natural forests through logging bans and afforestation with incentives to forest enterprises*”
 - “***GTGP** converts cropland on steep slopes to forest and grassland by providing farmers with grain and cash subsidies*”
- Quote: “*Overall ecological effects are beneficial, and socioeconomic effects are mostly positive. Whereas there are time lags in ecological effects, **socioeconomic effects are more immediate.***”
- Quote: “*Extended payments for the GTGP have recently been approved by the central government for up to 8 years.*”
- Quote: “*To make these programs more effective, we recommend systematic **planning, diversified funding, effective compensation**, integrated research, and comprehensive **monitoring.***”

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0.0.19 (Mabogunje 2007)

- Title: Tackling the African “poverty trap”: the Ijebu-Ode experiment
 - Economic perspective
 - Microfinancing and city-community consultation approach to poverty alleviation/reduction.
 - Question: *Can poverty be dramatically reduced through a city consultation process that seeks to mobilize the entire community along with its diaspora?*
 - Quote: *“There is increasing evidence that poverty in the city has been reduced significantly through the microfinancing of existing and new productive activities and the estimated >8,000 jobs these activities have created.”*
 - Quote: *“Training based on both sustainability science and technology and indigenous practitioner knowledge has been a critical factor in the establishment of cooperatives and the development of new enterprises in specialty crops, small animal, and fish production.”*
 - Quote: *“Much of this success has been possible as a result of harnessing social capital, especially through the dynamic leadership of the traditional authorities of the city and by the provision of ample loanable funds through the National Poverty Eradication Program of the federal government.”*
 - Quote: *“Yet long-term sustainability is still in question as the initial leadership needs replacement, and credit, the heart of the experiment, lacks sufficient collateral.”*
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0.0.20 (Mäler, Aniyar, and Jansson 2008)

- **HIGHLIGHTED PUBLICATION***
 - Title: Accounting for ecosystem services as a way to understand the requirements for sustainable development
 - Economic perspective
 - Ecosystem services accounting (valuation)
 - Incorporation of national ecosystem accounting into standard national accounts
 - * This is one of the clear “bright spots” leading up to the process of OECD mandating member states to implement green accounting systems.
 - * Quote: *It is therefore important that these services are included in our economic accounts (Standard National Accounts), as long as we believe that these accounts should tell us something about our wellbeing. This requires measures of the ecosystem assets and their accounting prices.*
 - Focus on **inclusive wealth** as a concept for creating green accounts
 - * Quote: *“It is therefore important that these services are included in our economic accounts (Standard National Accounts), as long as we believe that these accounts should tell us something about our wellbeing. This requires measures of the ecosystem assets and their accounting prices. This article discusses how the concept of inclusive wealth can be exploited for creating such accounts.”*
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0.0.21 (Morgan 2014)

- “Use (and abuse) of expert elicitation in support of decision making for public policy”
 - Notes: NA
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0.0.22 (Nagendra 2007)

- Title: **Drivers of reforestation in human-dominated forests**
 - Case study: Nepal
 - Quote: “*Results affirm the central **importance of tenure regimes and local monitoring for forest regrowth**. In addition, user group size per unit of forest area is an important, independent explanator of forest change. These variables also can be associated with specific practices that further influence forest change such as the **management of social conflict, adoption of new technologies to reduce pressure on the forest, and involvement of users in forest maintenance activities**.*”
 - **Economic perspective**
 - No obvious economic perspective. Appears to focus on social, technological and ecological variables, maybe because of the focus on reforestation instead of deforestation.
 - Unaddressed questions: What role does financial flows play in driving forest change.
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0.0.23 (Naidoo et al. 2008)

- Title: **Global efforts to conserve biodiversity have the potential to deliver economic benefits to people**
 - **Economic perspective:**
 - Conserving biodiversity to provide economic benefits to people
 - Mapping the economic benefits of conserving biodiversity
 - Win-win situations of high priority biodiversity conservation and ecosystem services areas appear to be rare and vary widely in frequency between eco-regions across the globe.
 - Quote: “*Global efforts to conserve biodiversity have the potential to deliver economic benefits to people (i.e., ‘ecosystem services’).*”
 - Quote: “*However, regions for which conservation benefits both biodiversity and ecosystem services cannot be identified unless ecosystem services can be quantified and valued and their areas of production mapped.*”
 - Quote: “*Our preliminary results show that regions selected to maximize biodiversity provide no more ecosystem services than regions chosen randomly. Furthermore,*”
 - Quote: “*Despite this lack of general concordance, ‘win-win’ areas- regions important for both ecosystem services and biodiversity- can be usefully identified, both among ecoregions and at finer scales within them. An ambitious interdisciplinary research effort is needed to move beyond these preliminary and illustrative analyses to fully assess synergies and trade-offs in conserving biodiversity and ecosystem services*”
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0.0.24 (Naylor et al. 2009)

- **Feeding aquaculture in an era of finite resources**
- **Efficiency perspective** Trends in efficiency of farmed fish production relative to input of harvested wild fish.
- **Economic perspective** The role of regulation and economic incentives, relative prices and consumer choices/acceptance for determining use of more environmentally friendly feed sources in agriculture.

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0.0.25 (Okwi et al. 2007)

- Title: **Spatial determinants of poverty in rural Kenya**
- **Economic perspective**
- Spatial geographical correlates of poverty
 - “evidence from poverty maps for Kenya and other developing countries suggests that poverty and income distribution are not homogenous. We use spatial regression techniques to explore the effects of geographic factors on poverty.”
- Different spatial factors explain poverty in different regions.
 - Therefore, policies targeted to specific provinces are needed.
- Policy simulations of what will work to reduce poverty rates.
 - “Policy simulations are conducted to explore the impact of various interventions on location-level poverty levels. Investments in roads and improvements in soil fertility are shown to potentially reduce poverty rates, with differential impacts in different regions.”

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0.0.26 (Parris and Kates 2003)

- **HIGHLIGHTED PUBLICATION**
- Title: **Characterizing a sustainability transition: goals, targets, trends, and driving forces**
- “Recent scholarship has focused on the nature of a sustainability transition”
- Sustainability transition defined as “stabilizing future world population while reducing hunger and poverty and maintaining the planet’s life-support systems”
- **Aims:**
 1. To “characterize a sustainability transition by drawing on the consensus embodied in internationally negotiated agreements and plans of action”
 2. Accelerating a sustainability transition
 3. “examine current scholarship on the processes that influence attainment of **four such goals** (driving forces): reducing **hunger**, promoting **literacy**, stabilizing **GHG concentrations**, and maintaining **fresh-water availability**.”

- **Macro-socio-ecology**

- Examines the I=PAT relation for measuring human pressure on environment
 - * Talks about Kaya identity for measuring energy-related CO2 emissions
 - * Quote: “Three sets of forces driving human impact on life-support systems and living resources are common to most analysis: population, affluence or income, and technology, the so-called I?PAT identity (47, 48). For example, studies of energy-related carbon emissions are structured by using the Kaya identity, where CO2 emissions are a function of population, affluence (GDP per capita), energy intensity (units of energy/GDP), and technology (CO2 emissions per unit of energy). Further decompositions account for differences among economic sectors (e.g., agriculture versus transportation) and energy technologies (e.g., nuclear, coal, oil, natural gas, and renewables). **Sophisticated analysts are careful to recognize that the variables in such decompositions are not fundamental driving forces in and of themselves and are not independent from one another (30, 49).**”
- Examines in-equality measures (properties of asset distributions) as a way of quantifying human needs (human pressures on humans???)
 - * Quote: “A similar approach can be applied to human needs with an expanded concept of both income and institutional equity substituting for technology. In addition to commonly cited economic measures of equity (e.g., the GINI coefficient, poverty rate, and poverty gap), there are also institutional components of equity that are difficult to measure in economic terms. Examples include access to and quality of health care, education, housing, and employment. Depending on the context these factors of ‘institutional equity’ will be influenced by the extent and character with which access is provided by government as a public good (i.e., entitlements) and various forms of explicit or implicit discrimination.”
- Suggests a generic relationship to measure aspects of development - **D=PAE**
 - * Quote: “In the case of chronic household hunger, current estimates explicitly consider the population, the average income per person, the distribution of income across the population, and the definition of a hunger line of income or its equivalent below which the population is thought to be hungry. Similarly, primary and secondary school enrollment have been modeled in terms of school-age population, national expenditures per school-age person, household income, family size, and parental education. In this context household income is a direct measure of within- country inequality, whereas family size and parental education are related to inequality one generation prior. Together, these two case studies suggest the possibility of a generic relationship between development and the interactions between the target population (e.g., school-age population), affluence (GDP per capita), and equity (percent of the relevant population in households above an income or entitlement threshold) that can be expressed as **D=PAE.**”
- Mentions Environmental Kuznets Curve hypothesis and altruistic human behavior as one way (though “anecdotal” of explaining the curve.
 - * Quote: “There are also a number of tantalizing, although anecdotal, cases that suggest changes in consumer preferences can alter future scenarios significantly for the better (48, 50). Some of these stories are classic examples of the Kuznets hypothesis. For example, altruistic consumer willingness to pay a premium for shade-grown coffee is reducing pressure for certain types of deforestation. Others such as the substitution of poultry for beef in the United States are driven by self-interested health concerns (51).”

- **Economic perspective**

- A macro-perspective on measuring progress in the sustainability transition.
 - * Stops short relating back to natural-resource consumption per se...
- Mentions I=PAT

- * Kaya identity for CO2 emissions
- Suggests a generic relationship to measure aspects of development - **D=PAE**
 - * Quote: *“In the case of chronic household hunger, current estimates explicitly consider the population, the average income per person, the distribution of income across the population, and the definition of a hunger line of income or its equivalent below which the population is thought to be hungry. Similarly, primary and secondary school enrollment have been modeled in terms of school-age population, national expenditures per school-age person, household income, family size, and parental education. In this context household income is a direct measure of within- country inequality, whereas family size and parental education are related to inequality one generation prior. Together, these two case studies suggest the possibility of a generic relationship between development and the interactions between the target population (e.g., school-age population), affluence (GDP per capita), and equity (percent of the relevant population in households above an income or entitlement threshold) that can be expressed as **D=PAE**.”*
- Talks about various **public economic policies** to create economic incentives, poverty reduction, technological development and provide entitlements.

- **Leverage-point perspective**

- Identifies leverage-points of intervention for the for driving forces of poverty, literacy, health and GHG emissions
- Identifies one common driver -> *Population*
 - * Quote: *“The one such variable that is consistent across all four cases is population. There is no question that the increasing world population makes progress on all aspects of sustainability more difficult.”*
 - * Leverage points relating to population - population, education (limited by teachers - suggests importing teachers), reduction of income inequality by combining entitlements and poverty reduction.
 - * Leverage points relating to technology. Identifies technology as the main leverage point after population. That is, it embraces both the Malthusian and cornucopian perspectives.
 - * **The most powerful lever of change.** *“Thus perhaps the most powerful lever of change is the concerted willingness of governments, business, and civil society to press ahead with the well understood actions needed to achieve the current 2015 goals of the Millennium Declaration and the World Summit for Sustainable Development.”*

0.0.27 (Perry, Grace, and Sones 2011)

- **Current drivers and future directions of global livestock disease dynamics**
- **Economic perspective** Comparison of trends between in ecological trends between rich and poor countries - more specifically: Divergent trends of animal health between poor and rich countries (improving in rich, deteriorating in poor).

0.0.28 (Ramanathan and Xu 2010)

- Title: **The Copenhagen Accord for limiting global warming: criteria, constraints, and available avenues**
- Aim: *“This study develops the criteria for limiting the warming below 2 °C, identifies the constraints imposed on policy makers, and explores available mitigation avenues. One important criterion is that the radiant energy added by human activities should not exceed 2.5 (range: 1.7-4) watts per square meter (Wm⁻²) of the Earth’s surface.”*
- **Economic perspective:**
 - Decarbonization of the economy through policy and technological development (i.e. in essence cornucopian?)
 - * Even if GHG emissions peak in 2015, the radiant energy barrier will be exceeded by 100%, requiring simultaneous pursuit of three avenues:
 1. reduce the rate of thickening of the blanket by stabilizing CO₂ concentration below 441 ppm during this century (**a massive decarbonization of the energy sector is necessary** to accomplish this Herculean task)
 2. ensure that **air pollution laws** that reduce the masking effect of cooling aerosols be made radiant energy-neutral by reductions in black carbon and ozone
 3. thin the blanket by **reducing emissions of short-lived GHGs**.
 - * Quote: *“the four decades we have until 2050 should be exploited to **develop and scale-up revolutionary technologies** to restrict the warming to less than 1.5 °C.”*

0.0.29 (Sanchez et al. 2007)

- Title: **The African Millennium Villages**
- Aim: *“We describe the concept, strategy, and initial results of the Millennium Villages Project and implications regarding sustainability and scalability.”*
- **Economic perspective**
- Public-private sector relations in the context of poverty reduction
- Public sector investment to facilitate poverty reduction through private sector savings and investment
- *“underlying hypothesis is that the interacting crises of agriculture, health, and infrastructure in rural Africa can be overcome through **targeted public-sector investments to raise rural productivity and, thereby, to increased private-sector saving and investments**”*
- *“In early results, the research villages in Kenya, Ethiopia, and Malawi have reduced malaria prevalence, met caloric requirements, generated crop surpluses, enabled school feeding programs, and provided cash earnings for farm families.”*

0.0.30 (Sayer et al. 2013)

- **Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses**
 - **Economic perspective:** Managing land to achieve economic (and other) outcomes. The landscape as a tool to achieve and reconcile multiple objectives. Institutional and governance concerns are raised as constraints, but not with reference to influence of finance.
-

0.0.31 (Sidle et al. 2013)

- **Broader perspective on ecosystem sustainability: Consequences for decision making**
-

0.0.32 (Tallis et al. 2008)

- **Title: An ecosystem services framework to support both practical conservation and economic development**
 - **“*The core idea of the Millennium Ecosystem Assessment is that the human condition is tightly linked to environmental condition.*”**
 - *“conservation and development projects should be able to achieve both ecological and social progress with- out detracting from their primary objectives”*
 - *““win-win” projects that achieve both conservation and economic gains are a commendable goal, they are not easy to attain”*
 - Seems here to equate social progress with economic gains
 - ***“An analysis of World Bank projects with objectives of alleviating poverty and protecting biodiversity revealed that only 16% made major progress on both objectives.”***
 - **Aim** *a framework for anticipating win-win, lose-lose, and win-lose outcomes as a result of how people manage their ecosystem services*
 - *“scientific advances around ecosystem service production functions, tradeoffs among multiple ecosystem services, and the design of appropriate monitoring programs are necessary for the implementation of conservation and development projects that will successfully advance both environmental and social goals.”*
 - **Economic perspective**
 - What characterizes successful and unsuccessful examples of joint biodiversity/ecosystem service conservation and economic growth
 - The main conclusion in the abstract stops short of specifics, but mentions “how people manage ecosystem services” is the deciding factor.
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