



# Green Economy: Commoditization of the Commons

## Summary

The shift from a focus on “sustainable development” at the first Earth Summit in 1992 to that on the “green economy” at the upcoming Rio+20 summit is more than changing terms. It reflects a fundamental change away from recognizing the need to limit some kinds of economic growth. The new “green economy,” which is being promoted by the multinational corporations, international institutions and national governments, identifies growth as the primary driver of environmental change and development.

This paper explores the emergence of this new definition of the green economy, and then focuses on one of its controversial mechanisms, Payment for Ecosystem Services (PES), in the context of water.

“Green growth” started to emerge as an influential term around 2005, as newly industrializing countries like South Korea sought a strategy to continue with old models of economic growth while

addressing the most immediate environmental concerns. This was followed by several other green growth initiatives globally, and from around 2008 the United Nations Environmental Program (UNEP) has vigorously promoted the term “green economy.” These initiatives focus on improving resource use efficiency, but do not recognize the environmental limits of the planet. Instead, they are primarily about recognizing the *economic* value of the environment.

What is especially novel about the green economy model is its push to identify, measure, value and manage those environmental benefits, including ecosystem functions such as the provisioning of food, water, medicinal plants, fuel-wood and fiber etc., that are not yet part of the market economy. These specific functions of the ecosystems, and the benefits from these functions are broadly called *environmental services or ecosystem services* (used interchangeably in this paper). The call for valuing ecosystem functions within the green economy then becomes a call

for treating it like other services in the market economy—with a price attached to it, albeit a price that is at best speculative. The naming and measuring of “ecosystem services” in terms of its value to the conventional or “brown” economy sets the stage for bundling and commoditizing these commons for market transactions.

## Policy recommendations

1. Rio +20 and relevant U.N. conventions such as *United Nations Convention on Biological Diversity* must develop a set of sociocultural and economic criteria with which green initiatives must comply, for them to be considered for implementation at local national and international levels.
2. Ecosystem stewardship should be incentivized through public payments, and ensure that these have social protection criteria.

3. Prevent the establishment of a derivatives market in ecosystem services.
4. Ensure that social protection programs include criteria for ecosystem restoration.
5. Ensure that initiatives to protect ecosystems and enhance ecosystem functions are holistic, and protect community rights (right to water, food sovereignty and livelihood rights).

## Introduction

The green economy as a broad idea has been around for a very long time, practiced by communities and societies who were forced to live within their means either through cultural norms, social contracts or through technological and other resource constraints. The idea of the green economy as developed by ecologists and environmentalists in the '70s and '80s drew on this understanding and recognized the necessity of limiting some kinds of growth.

In contrast, the green economy that is being promoted now by the multinational corporations, international institutions and national governments identifies growth as the primary driver of change. This is evident from the new approach, known as green growth strategy.

This paper explores the emergence of this new definition of the green economy, how it is playing out within international processes, and then focuses on one of its controversial mechanisms, Payment for Ecosystem Services (PES), in the context of water.

## International initiatives in green growth: Historicizing green economy

The first U.N. conference on Environment and Development (a.k.a. Earth Summit, 1992) in Rio de Janeiro, Brazil attempted to find a compromise between the development needs of

poorer countries in the global South, and the sustainability concerns of industrialized countries in the North by recognizing the common but differentiated responsibilities of the various nation states (*Rio Declaration on Environment and Development*, Principle 7). Its key emphasis was on sustainable development, which was defined as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>1</sup> Even though a few principles are recognized as crucial to ensuring sustainable development, (such as ensuring social equity, and decreasing disparities in standards of living), as well as ensuring environmental protection both in the shortterm (making it integral part of the development process) and in the longterm (with the application of precautionary principle),<sup>2</sup> it still remains a fluid concept and has lent itself to various interpretations over the years.

By the beginning of this millennium, it was clear that dwindling natural resources, combined with climate change and insatiable needs for energy were altering global economies. Simultaneously, political and business leaders in many industrialized countries came to the realization that the future of economic growth in the conventional sense was in crisis. This was particularly true for highly populated Asia, which saw unprecedented industrialization in the 1990s. What most worries many industrial economies, especially the new industrialized economies of Asia and the business sector, is the future of their economic growth in the face of scarce basic natural resources such as water.

It is in this context that “green growth” emerged as a strategy to help continue with old models of growth, while addressing the most immediate environmental concerns. Foremost amongst countries promoting such a development model were South East Asian nations such as South Korea. The first regional level, inter-governmental process that

focused on the synergy between environmental sustainability and economic growth was the Ministerial Conference on Environment and Development in Asia and the Pacific (MCED) of the U.N. Economic and Social Commission for Asia and the Pacific (ESCAP), which took place in Seoul in March 2005. This process established the Seoul Initiative Network on Green Growth (SINGG).<sup>3</sup>

Since then, there have been several other green growth initiatives globally, with the United Nations Environmental Program (UNEP) promoting the term “green economy.” These initiatives, while recognizing the need to improve resource-use efficiency, do not recognize the planet’s environmental limits.

In June 2009, the President of the United Nations General Assembly (UNGA) organized a “Conference at the Highest Level on the World Financial and Economic Crisis and Its Impact on Development.”<sup>4</sup> In their statement to the conference, 21 U.N. agencies joined forces to underscore the need for a shift to a green economy that can spur job creation and curb a multitude of threats ranging from current crises related to food, water and climate change.<sup>5</sup> In December 2009, UNGA adopted a resolution deciding to organize, in 2012, the United Nations Conference on Sustainable Development (UNCSD), also known as Rio+20, and for it to focus on the theme: “green economy in the context of sustainable development and poverty eradication.”<sup>6</sup>

With this, the “green economy” became the vehicle of choice for the international community to deal not only with multiple crises in climate, water, energy and food, but also to undertake other projects and initiatives which had earlier been covered under the banner of sustainable development through the UNCSD.

## What is the green economy?

The UNEP defines the green economy as one that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive.” This lofty thought receives a distinctive inflection a little further on: “Practically speaking [...] [t]his development path should maintain, enhance and, where necessary, rebuild natural capital as a critical economic asset [emphasis added] [...] and source of public benefits, especially for poor people whose livelihoods and security depend strongly on nature.”<sup>7</sup>

We can see that this is where the distinctiveness of the current orientation, its departure from the older paradigm, begins to emerge. The new model is primarily about advocating for the recognition of the *economic* value of the environment and the benefits it provides to humanity.

This advocacy occurs on two levels. First, it advocates the need for improving efficiency in the area of natural resource use. The focus on resource use efficiency can either be in terms of reducing the quantity of the resource used (like water used in energy production), or in terms of the negative impact an activity (like water pollution) has on the resource itself, or both. But what is especially novel about the green economy model is its second level: advocacy for the need to identify, measure and place monetary value on those environmental benefits, including ecosystem functions such as the provisioning of food, water, medicinal plants, fuel-wood and fiber etc., that are not yet part of the market economy.

In the context of green economy, the specific functions of the ecosystems, and the benefits from these functions are broadly called *environmental services* or *ecosystem services* (ES). The call for valuing ecosystems functions within

the green economy then becomes a call for treating it like other services in the market economy—with a price attached to it, albeit a price that is at best speculative. The naming and measuring of “ecosystem services” in terms of their value to the conventional or “brown” economy sets the stage for the next step: that of commoditizing them and making them available for market transactions. Here ecosystem benefits, like carbon sequestration by forests, or water purification by pristine watersheds that were hitherto in the commons realm is made into a commodity, and assigned a monetary value, even though the value itself is speculative and in most cases immeasurable to the community. It is here that the conceptualization of green economy becomes particularly problematic.

In short, the green economy sets the stage not only for trading in the conservation of commons such as water and biodiversity, that so far had escaped commodification; but also the trading in ecosystem functions, like carbon sequestration (already happening under carbon markets) to other ecosystem functions such as water purification and possibly even evapo-transpiration and pollination. This has tremendous implications for communities who have been custodians of these ecosystems, in some cases for generations.

## Improving water quality or valuing ecosystem functions that enhance water quality

A focus on water has been a crucial dimension of green economy initiatives. The interagency coordination mechanism on water at the United Nations, *U.N. Water*, asserts in its submission to the Rio+20 Outcome Document that the “Success of green economy depends on sustainable management of water resources and on safe and sustainable provisioning of water supply and adequate sanitation services.”<sup>8</sup>

It is well recognized that water quality improvements can occur when the rate of water pollution per unit of production or service decreases. This can be achieved by changing production practices, inputs, technology, and processes. If the production is tied to an established set of practices, the required changes not only call for new investments, but also undermine the profit of maintaining the system. An alternative is to treat the polluted water before disposal or, preferably, to reuse it. In fact, trade in ownership of treated waste water futures, is seen as a new area of water trade. Commodity traders, such as Switzerland-based Valerie Issumo, are already in the process of setting up markets that seeks to commoditize treated water (from wastewater). Her “ethical” water futures market, would offer a platform for those generating waste water, (or intermediaries) to sell treated water to those who need it, such as industries, large agri-corporations or governments.<sup>9</sup> Here the idea is to use treated water as the underlying commodity, by developing futures markets in it.

A possibly cheaper option to deal with polluted water is of course dilution. In fact the *gray water footprint* is “defined as the volume of freshwater that is required to assimilate the load of pollutants based on existing ambient water quality standards.”<sup>10</sup> It is in this area of water purification that ecosystems and its functions become important.

It is now well recognized that the ecosystem plays a very important role in the hydrological cycle by regulating the availability and purity of water. While earlier this role of the ecosystem was taken for granted, and not quantified, the Economics of Ecosystems and Biodiversity (TEEB) initiative, launched by

A PES is defined as a 1. a voluntary transaction where, 2. a well-defined ES (or a land-use likely to secure that service), 3. is being ‘bought’ by a (minimum one) ES buyer, 4. from a (minimum one) ES provider 5. if and only if the ES provider secures ES provision (conditionality).<sup>12</sup>

Germany and the European Commission in 2007, is about identifying the various functions and measuring them.<sup>11</sup>

Trading in ecosystem functions is advocated as an option for polluters who find it unprofitable to invest in changing their polluting practices or treating effluents before releasing it to the natural systems. Valuing of ecosystem functions and Payment for Environmental Services (PES) then becomes an integral part of such trading that involves transaction between two parties, buyers and sellers of Environmental Services (ES).

PES is, in general, seen as a transaction between a private provider of ES (one or a collective of many individuals) and a public or private buyer of ES. In contrast, when the public sector gets involved in protecting ecosystem functions, in general, the tendency has been to make public investments in protecting the ecosystems, or at times, cordoning off the ecosystems, the latter resulting in enclosures and exclusion of communities.

PES is also seen as an economic instrument to help meet the water quality needs of downstream water users at a lower cost by paying the upstream land stewards. According to advocates of such trading, it offers a win-win situation to land owners who in return for payment are able to protect ecosystems, and provide cleaning up services.

Such trading assumes that the ecological processes that contribute to the specific ecosystem function can be traced to specific locations and individuals. However, due to ecological complexities, the relation between land use practices and ecosystem functioning (and thus services) is highly context specific and hard to isolate and measure, especially where the functions are either regulatory in nature such as in the case of water related services or they are about habitat provision (as in the case of biodiversity).<sup>13</sup>

In addition, since rewards are likely to be assessed per area of the watershed, PES as a mechanism has the potential to benefit larger landowners. private

realm Monetizing these ecosystem functions by converting them into

Sukhomajri is an Indian village that made history in the early 1980s by being the first to convert its denuded hills into fertile forests. While I had learned about Sukhomajri in early 1980s, I first met Mishraji (Mr. P.R. Mishra as he was known to his colleagues and friends) the man behind the miracle, in 1986 when he visited the *adivasi* area where I was working as an organizer.

An inspiration to many, Mishraji had gone to Sukhomajri, Haryana, to build soil and water conservation structures, but in addition ended up promoting planting cycles that guaranteed year-round employment, as well as short- and long-term benefits to villagers in terms of fodder, fruits and timber in the long run. Such activities undertaken both in private lands in the village and in public lands surrounding the village helped increase water availability in the village, increased their access to food and fodder and helped them undertake additional watershed protection activities. This holistic approach in turn helped Mishraji meet the original purpose of the project he had undertaken: that of controlling the silting of the Sukna Lake downstream.

Within a few years of the project's inception, annual sedimentation was reduced by more than 90 percent, saving the state close to USD \$200,000 in dredging and related costs.<sup>15</sup> Social processes were key to the success of the project. (When visiting our area of work, I remember his acute awareness of poorest families in the village.) Over the years, the institutional arrangements to include the landless were modified to incorporate gender concerns as well. It helped that the community was homogenous in terms of its caste affiliations.

Yet, by 1998, Sukhomajri stood at the crossroads.<sup>16</sup> Despite the ecosystem protection measures undertaken by the community over two decades, its rights to those benefits had been eroding. This is partially because of the conflict between the subsistence economy practiced by the villagers of Sukhomajri and the cash economy practiced by the villagers of nearby Dhamala. In 1995, forest authorities and an NGO that was advising the government by then, TERI (headed then by the current IPCC chair R.K. Pachauri), apparently supported the interests of Dhamala villagers, rather than that of Sukhomajri Villagers. Mostly consisting of upper-caste land owning villagers, Dhamala had better access to decisionmakers, compared to lower-caste herder community members of Sukhomajri. Managing internal conflicts and making sure that the natural resources wealth is shared in a just manner continue to be challenging.

The articulation of Sukhomajri as an example of PES thus ignores several key issues. First and foremost, the community members were never paid for the biggest "ecosystem service" they provided: arresting the soil erosion and reducing the silt accumulation in the lake, the drinking water source of a nearby city. So there has not been any payment (PES) in this case between the two interested parties: the provider of the service (the villagers of Sukhomajri) and the beneficiary (the state department doing the silt dredging in the lake).

Second, the rewards shared by the community (water, grass, etc.) were generated through their own activities in individual lands and common lands, and was just one (though important) component of the project. Transactions related to those benefits, (such as everyone in the village paying a fee—in return for accessing, say, fodder—to the collective village level fund that was used for re-investment in the village) were not in return of the benefit received or for improving ecological efficiency, but for ensuring social cohesion, equity and for ensuring the economic sustainability of their efforts. In this, too, it differs from the PES concept.

Third, the portrayal of Sukhomajri, as an example of PES, strips Sukhomajri of its distinctive approach: Chakriya Vikas Pranali or cyclic system of development, which calls for a little bit of *public funds* that when reinvested in the society goes a long way to ensure long term sustainability. According to PR Mishra, the originator of the idea: "The cyclic system of development is a demonstration and extension based on the Sukhomajri system of growth which established that the forests can be the source of all energy that society needs. The system is called cyclic as the benefits from one investment cycle becomes capital for the next and thus goes on increasing rural employment and the village fund which finally makes the village self-reliant and the environment congenial to mankind."<sup>17</sup>

Most importantly, while much has been written about the ecological benefits accrued to the community and to the public in general, economic benefits to the villagers (and to the state), and economic viability of this project, as well as the social processes and human resources that contributed to this success story, have not received adequate attention.<sup>18</sup>

services can also lead to exclusions of sections of the community, often the most vulnerable.

The distinctive nature of PES is evident in the Sukhomajri project in India. The project is cited by the TEEB study as an early example of PES.<sup>14</sup> Yet, while here (as in many other cases around the world), land stewardship and ecosystem protection activities taken up in the upstream areas provides a clear benefit to downstream users, these activities cannot be subsumed under the PES rubric. The reason for its success over almost two decades was its attention to social concerns and livelihood challenges faced by the local community. Even though it benefitted the downstream water users, saving the state annually USD \$200,000 as of 2000, the villagers did not receive any direct monetary compensation for this activity, nor was it provided by them exclusively as an ecosystem service.

As the example of Sukhomajri suggests, ecosystem protection offers tremendous ecological benefits to society. In addition, it shows that public support investments in ecosystem protection, provided to individuals and communities, who have sometimes been custodians of these ecosystems for generations, to undertake the conservation practices, can go a long way in enhancing ecosystem functioning.

It also offers a glimpse of the challenges of implementing such practices in a socially just manner at the ground level. For example, following the success of Sukhomajri, in the early to mid nineties, several states of India began initiatives such as “participatory forest protection committees” and “joint forest management projects.” With village committees enclosing part of the village commons for regeneration efforts, in most states women experienced increased problems in accessing firewood and other minor forest products that they needed for fulfilling their daily needs.<sup>19</sup> Given the gender, ethnicity and economic-based differences within and between

communities involved in the Sukhomajri project, lessons on addressing equity abound. Here, in Sukhomajri, public investments, combined with dedicated investments in social processes, helped result in private, community and public benefits.

As opposed to these practices, trading in water related ecosystem services presupposes an open market where sellers of ecosystem services (such as land owners) and buyers of ecosystem services (those who need to offset their pollution, or those who need clean water for their use) can agree upon a price for the service being offered as payment for ecosystem services. In such cases, where the beneficiary no longer can experience the benefit, nor has a stake in the actual functioning of the ecosystem, it is unlikely that the system will function as well. In addition, if developed as an offset mechanism, water-related ecosystem regulatory services are similar to carbon mitigation associated with REDD, or soil carbon sequestration under CDM, making trade in these services malleable to manipulations of the market.<sup>20</sup>

### **Trading in ecosystem functioning, payment for ecosystem services (PES), and equity**

The problems associated with addressing equity increases manifold when markets are seen as the space for ensuring ecological sustainability.

Many of the ecosystem functions occur in the realm of the commons. In its conceptualization, the Economics of Ecosystems and Biodiversity (TEEB) initiative identifies the stewards of the ecosystem as key actors, and acknowledges the importance of recognizing those who currently benefit from these commons. While many initiatives under the green economy are about improving resource-use efficiency, the ambitious initiative to recognize the value of ecosystem stewardship has the biggest potential for moving humanity firmly on a path towards sustainability. However,

by identifying PES as the primary mechanism for recognizing this value, and by placing it in the realm of market, the TEEB initiative may already have nudged the process of ecosystem stewardship in the wrong direction: toward commodification of the commons.

The protection of communities rights to these commons is of paramount importance, for ensuring socioeconomically just outcomes. One of the problems of earlier attempts at protecting natural resources was that they did not recognize the role of community in protection of these resources, or the role of these resources in community livelihoods. In this conservation-oriented approach, entire communities are excluded from accessing the resources, and thus the commons become enclosures where command and control is used as a policy tool for protection. Such is the case of State Forest Departments in India, for example, directly enforcing the rules of access. But even where “participatory forest protection committees” are put in place, as we saw earlier in the case of participatory “joint forest management efforts” such exclusions continue; the difference being that the exclusion is targeted towards more vulnerable members of the community, especially politically marginal groups.

Similarly, the PES approach, by choosing economic payment as a proxy for social justice, ignores equity concerns along other important vectors such as gender, ethnicity, class, etc. In the absence of social processes to ensure equity, the new approach will help continue the marginalization of vulnerable groups. There is a possibility that the roles played by those who are not recognized as economic actors will lose out. On the other hand, such transaction costs (in terms of support for organizing) will increase the cost of the ecosystem service being marketed, to such an extent that the potential beneficiary may find the price too high—as a result there may not be a viable market to support PES.

The valuing of ecosystems is extremely important; individuals and communities need incentives to initiate practices that enhance ecosystem services. Similarly, individuals, communities and firms that impact the ecosystem negatively need to pay as well. Yet as in the case of carbon trading, the value of the ecosystem services is speculative, and determined in relation to its value to the brown economy. Even from a purely economic point of view, it will not be the most cost-effective way of ensuring social protection while enhancing ecosystem functioning.

## Conclusion

Activists have long been saying that, “The term ‘green economy’ has been hijacked by those who pollute and then profit by trading in pollution. Nature has infinite value and should not be given a price tag so that it becomes just one more input in the capitalist market economy [...]”<sup>21</sup> On the other hand, communities that live in a dynamic relation with nature (such as peasant farmers, forest dwellers and fishers, who are exposed to nature’s elements in their day-to-day lives) consider nature invaluable. In contrast to the approach adopted in green economy, the proposal on Universal Declaration of the Rights of Mother Earth, approved by the World People’s Conference on Climate Change and the Rights of Mother Earth on April 22, 2010, is informed by such an understanding that recognize the integral connections between humans and Nature.<sup>22</sup> This recognition should form the basis for new approaches to balance development, environmental protection and social justice around the world.

## Policy recommendations

1. Rio +20 and relevant U.N. Conventions such as *United Nations Convention on Biological Diversity* should carry out an inclusive process to develop a set of sociocultural and economic criteria before developing any international,

regional or national mechanism for the implementation of any future green initiatives.

2. Governments should incentivize ecosystem stewardship through public funding and ensure that these initiatives have social protection criteria.

3. Governments and international institutions should prevent the establishment of a derivatives market in ecosystem services.

4. Governments and donor agencies should ensure that social protection programs include criteria for ecosystem restoration.

5. The Rio+20 declaration should clearly specify that initiatives to protect ecosystems and enhance ecosystem functions are holistic, and protect community rights (right to water, food sovereignty and livelihood rights).

## References

- World Commission on Environment and Development: Report of the World Commission on Environment and Development: Our Common Future, Chapter 2, Towards Sustainable Development, the <http://www.un-documents.net/wced-ocf.htm>. Accessed on January 30, 2012.
- United Nations General Assembly: Rio Declaration on Environment and Development, Principles 5, 4 and 15, Annex 1 to the Report of the United Nations Conference on Environment and Development, 9 A/CONF.151/26 (Vol. I), Rio de Janeiro, 3-14 June, 1992; <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>. Accessed on January 30, 2012.
- United Nations Economic and Social Commission for Asia and the Pacific (ESCAP): UNESCAP Launches ‘Green Growth’ Initiative in Seoul, UNESCAP News Service, Press Release No: N/61/2005, 8 November, 2005 <http://www.unescap.org/unis/press/2005/nov/n61.asp>. Accessed February 1, 2012.
- U.N. General Assembly (UNGA): The U.N. Conference at the Highest Level on the World Financial and Economic Crisis and its Impact on Development, 1-3 June 2009; <http://www.un.org/ga/president/63/interactive/uneconference.shtml>.
- U.N. News Center/U.N. News Service: ‘Green’ economy vital to promoting development in midst of crises – U.N. agencies, 25, June 2009, <http://www.un.org/apps/news/story.asp?NewsID=31272&Cr=green+economy&Cr1=>.
- United Nations Environment Programme (UNEP): Green economy Note by the Executive Director, Twenty-sixth session of the Governing Council/ Global Ministerial Environment Forum, UNEP/GC.26/INF/17, February 21–24, 2011; Accessed February 14, 2012; [http://dcs.unon.org/confs/doc/unep/unep\\_gc\\_gc\\_26\\_gc\\_26\\_inf\\_17/K1170201.pdf](http://dcs.unon.org/confs/doc/unep/unep_gc_gc_26_gc_26_inf_17/K1170201.pdf).

7. United Nations Environmental Programme (UNEP): What is Green Economy? <http://www.unep.org/greeneconomy/AboutGEI/WhatIsGEI/tabid/29784/Default.aspx>; Accessed on February 14, 2012.

8. U.N. Water (2011): Water in the Green Economy: A Statement by U.N.-Water for the U.N. Conference on Sustainable Development 2012 (Rio+20 Summit), [http://www.unwater.org/downloads/UNW\\_RIOSTATEMENT.pdf](http://www.unwater.org/downloads/UNW_RIOSTATEMENT.pdf).

9. Debika Ray: Water trading: how the world’s most vital resource is up for sale, *Ecologist*, 21st September, 2011, [http://www.theecologist.org/investigations/science\\_and\\_technology/1063080/water\\_trading\\_how\\_the\\_worlds\\_most\\_vital\\_resource\\_is\\_up\\_for\\_sale.html](http://www.theecologist.org/investigations/science_and_technology/1063080/water_trading_how_the_worlds_most_vital_resource_is_up_for_sale.html); Accessed on February 14, 2012.

10. Hoekstra AY, Mekonnen MM (2012): The Water Footprint of Humanity, Proceedings of the National Academy of Sciences of the United States of America, PNAS 2012 : 1109936109v1-6.

11. European Commission: The Economics of Ecosystems and Biodiversity [http://ec.europa.eu/environment/nature/biodiversity/economics/index\\_en.htm](http://ec.europa.eu/environment/nature/biodiversity/economics/index_en.htm); Accessed on February 14, 2012.

12. Sven Wunder (2005), Payment for environmental services: Some nuts and bolts, CIFOR occasional papers 42, [http://www.cifor.org/publications/pdf\\_files/OccPapers/OP-42.pdf](http://www.cifor.org/publications/pdf_files/OccPapers/OP-42.pdf).

13. Unai Pascual etc. Revisiting the Relationship Between Equity and Efficiency in Payments for Ecosystem services, April 2009, Ecosystem Services Economics (ECE) Working Paper Series, UNEP.

14. <http://bankofnaturalcapital.com/2011/04/29/test/>.

15. Kanchan Chopra, Gopal K. Kadekodi and M. N. Murty (1990): Participatory development: people and common property resources. Sage Publications; New Delhi.

16. Richard Mahapatra (1998), ‘Sukhomajri stood at the crossroads’ Down to Earth, <http://www.downtoearth.org.in/node/22807>.

17. Richard Mahapatra (1998), ‘Sukhomajri stood at the crossroads’ Down to Earth, <http://www.downtoearth.org.in/node/22807>.

18. Khurana MR (2005), Common Property Resources, Peoples’ Participation and Sustainable Development: A Study of Sukhomajri, Punjab University Research Journal (Arts), XXXII (18,2).

19. Down To Earth (1994): Leaving the women in the Woods, Analysis, Sep 30, 1994 <http://www.downtoearth.org.in/node/32479>.

20. ActionAid (2011): Fiddling With Soil Carbon Markets While Africa Burns September 2011 [http://actionaidusa.org/assets/pdfs/climate\\_change/Fiddling\\_with\\_soil\\_carbon\\_markets.pdf](http://actionaidusa.org/assets/pdfs/climate_change/Fiddling_with_soil_carbon_markets.pdf); Accessed March 6, 2012.

21. Caplan, Ruth: Comments posted by Ruth Caplan, Dec 5 2011 to ‘The Water, Energy and Food Nexus’ <http://www.commondreams.org/view/2011/12/05-1>, Accessed February 1, 2012.

22. World People’s Conference on Climate Change and the Rights of Mother Earth: Building the People’s World Movement for Mother Earth: Rights of Mother Earth: Proposal Universal Declaration of the Rights of Mother Earth <http://pwccc.wordpress.com/programa/> Accessed February 25, 2012.