VOLUME 35

New Economy of Nature

A critical introduction

By **Thomas Fatheuer**

HEINRICH BÖLL STIFTUNG
ECOLOGY

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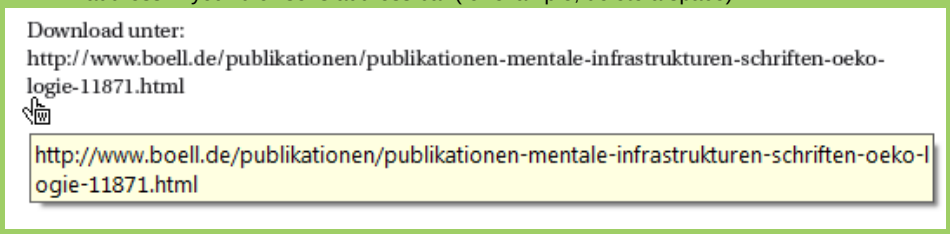

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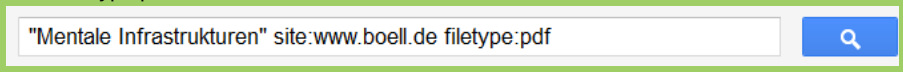

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NEW ECONOMY OF NATURE

HEINRICH BÖLL STIFTUNG
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VOLUME 35

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A critical introduction

By Thomas Fatheuer

Edited by the Heinrich Böll Foundation

The Author

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By Thomas Fatheuer
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FOREWORD

«Green Economy» is the new hope, putatively offering a response to the major ecological crises. As a concomitant, a new economic school of thought concerning nature and nature's «services» is gaining ground. Nature and its ecosystem services should not only be given greater visibility as elements of the economy, but should be given a monetary value. The working hypothesis of the advocates of a new economy of nature is this: the fact that what nature provides for humans is free is the reason for the destructive overuse of nature. We must give nature a value in order to protect it – that is the new mantra.

The new economy of nature places the utmost faith in economic rationality. It pushes *homo oeconomicus* to the new length of *natura oeconomica*. Even if we believe in the economic potential, this is an extremely risky wager. Experience with the flagship of market-based economic instruments, emissions trading, shows that a colossal amount of regulation is needed in order to make such an instrument work.

Nevertheless many of the large environmental organizations are currently subscribing to this line of argument and singing the praises of the new instruments for the valorization of ecosystem services. One reason for this is that the public coffers for nature conservation and biodiversity are empty all over the world, despite the immense need for funding. Even in a country like Germany, nature conservation authorities are severely affected by personnel and financial sclerosis. Understaffing and underfunding affect every level of conservation officialdom. New market-based instruments are therefore greeted as innovative financing sources, likely to boost the appeal of nature and biodiversity conservation to the private sector.

There are other political undercurrents behind this new wave of valorization of nature. The major environmental conventions from the 1992 Earth Summit have reached a dead end. Likewise, the Convention on Biological Diversity is treading water and its resolutions are only being implemented at a sluggish pace. The new paradigm revolving around «natural capital» seems to show a way out of this quandary. Does «valuing nature» make sense at all, and where do the new approaches go off in the wrong direction? As a green political foundation, one concern of ours is to analyse and debate these questions at the lines of intersection between democracy, ecology and justice.

Our intention in the current publication is to venture an introduction to the topic which outlines how the idea of the new economy of nature has evolved, and explains and critically questions key hypotheses of the new paradigm. It sheds light on the rationality of relevant actors and new instruments, and uses concrete cases as examples of the social and ecological goal conflicts and the influence that the new economy of nature is gaining in practice. As a German foundation, we have focussed

our attention on the German context. Germany is a key player in the new economy of nature and we hope that with our perspective and experience here we can provide a useful contribution to the global debate.

Handing over nature to market forces is a high-risk undertaking, for if the market fails, we lose nature – irretrievably. Economic incentives and market mechanisms confer no automatic protection of biodiversity and ecosystems. Our hope is that this publication will contribute to an evidence-based and nuanced debate on the sense, nonsense and risks of continuing to valorize and monetarize nature. We very much welcome all feedback, criticism and comments.

Berlin, April 2014

Barbara Unmüßig
President Heinrich Böll Foundation

1 The Context of the Debate, or: In Search of a Game Changer

The evidence is far from reassuring: although the critical diagnoses of global environmental problems have long been delivered, the state of the world continues to worsen. The year 2012 was a record year for global CO_2 emissions. With perfect timing that message of doom came twenty years after the adoption of the Framework Convention on Climate Change in Rio de Janeiro and in the year of the Rio+20 Conference. In 2013 the International Energy Agency – certainly not a radical environmental group – gave its sombre verdict: «The world is not on track to meet the target agreed by governments to limit the long-term rise in the average global temperature to 2 degrees Celsius (°C).»[1]

Other indicators of how the world's environmental state is deteriorating are equally alarming. On August 20 we stepped forward into Earth Overshoot Day, the day on which the world's resource consumption – calculated by the Global Footprint Network – crosses tolerable limits. In the year 2000, the resources for sustainable living and production and consumption were sufficient to last until October 9.

Equally widespread as the alarming diagnoses are resolute calls for action from politicians: «What is overlooked time after time in this debate is that, if we carry on the same as in the past, although we have no immediate worries, this inaction will have terrible consequences – this is plainly pointed out by the Stern Report and prior publications. Therefore it is my firm belief that the best option for all of us in the world is to change something, instead of doing nothing and burdening ourselves with catastrophic side-effects.» A clear statement from German Chancellor Angela Merkel at the Third Petersberg Climate Dialogue in 2012.[2]

As we accumulate knowledge we gain ever-increasing clarity about the necessity for action, but there is no sign of a global policy that holds out any likelihood of solving the problems identified. This does not apply to climate change alone. The second major international agreement to emerge from the Rio 92 Summit was dedicated to the conservation of biodiversity. Here again, the results have not been encouraging. The Millennium Development Goal of halting biodiversity loss by 2010 was not attained. Nor has the third Rio 92 convention, the United Nations Convention to Combat Desertification (UNCCD) succeeded in preventing the loss of fertile soils and the encroachment of deserts.

1 www.iea.org/publications/freepublications/publication/WEO_RedrawingEnergyClimateMap.pdf, p. 9.

2 www.bundesregierung.de/Content/DE/Rede/2012/07/2012-07-16-merkel-klimadialog.html (own translation).

Source: Pedro Biondi/Abr – Wikimedia

Rainforest destruction in the Mato Grosso region, Brazil

Decades after having identified the key global environmental problems, we have barely made any headway towards solving them. As a consequence, the prospect of a global regulatory process has suffered untold damage if it has not been wasted altogether. Despite all its shortcomings, the adoption of the Kyoto Protocol seemed to convince many actors that the prospect of a lasting global climate regime was a realistic goal. After the Copenhagen Climate Change Conference (2009), such hopes have largely dwindled. Even if there are numerous rationales for sticking with multilateral processes, hardly anyone now expects them to yield a global solution. Instead of a great master plan, countless unmanageable processes have been set in motion in the quest for responses to the global problems. The diagnosis that «nothing is being done» would be completely wrong; on the contrary, a great deal is being done. And there is constant news of positive developments: Germany is making good progress in expanding renewable energies; globally the number of protected areas is rising and there is a new mechanism (REDD) that might protect the tropical rainforest effectively. But are the conflicting and multi-layered processes operating on the right level to address the global challenges? In view of certain tendencies and events in recent years, it is legitimate to have doubts:

- There is a new upturn in the exploitation of fossil fuels (oil, coal, gas). High prices have favoured the use of new technologies (fracking) and prospecting in new oilfields (deep sea, tar sands, shale oil). According to the predictions of the economic actors involved (e.g. BP) in twenty years time, oil gas and coal will still account for 80% of the global energy supply.

- Political discourse in Europe is dominated by the economic and borrowing crisis. Policy-makers prove to be considerably more effective at taking action to bail out banks than to resolve environmental issues.
- As problems of social injustice begin to re-emerge (the low-pay sector, poverty pensions), questions of environmental sustainability return to being secondary considerations in political debates. The usual discussions about justice barely touch upon ecological dimensions.
- Due to high indebtedness, the scope for expenditure from public budgets is low and the social consensus leans more towards the prioritization of educational spending, in order to guarantee competitiveness.
- In recent years it has become clear that ecologically motivated policy pathways can end up competing with each other or causing unintended negative consequences. For instance, the biofuels advocated as a response to climate change are turning out to be a danger for food security and biodiversity.
- The transformation of energy systems is in no way a simple win-win pathway, but a complex challenge with potential for conflict and frustration.

These are just a few aspects that demarcate a confusing situation in which old pathways and solutions obviously no longer lead to the goal. Who is minded to carry on relying primarily on the «multilateral processes» ticket? There even seems little point in raising the volume of the prophecies of doom – the prophets have already shouted themselves hoarse. And after the biofuels disaster the faith in magical win-win solutions has given way to an entirely healthy process of facing up to reality.

A time, then, for reflections on the feasibility of socio-ecological transformations but also a time in which a new paradigm and novel answers are called for. Against this backdrop, it is no surprise that a new idea has taken hold in the political arena. In the second decade of the century, increasing numbers of publications and institutions are subscribing to the idea of the «green economy». A not-insignificant alliance of the UNEP, the World Bank and the OECD put forward this paradigm in advance of the Rio+20 Conference.

The idea of the green economy must be seen in the context, briefly outlined here, of the failures of the Rio process and hence of a global environmental policy. A new Kyoto will not save the climate now; only a transformation of the economy can make the critical difference – that is the message. Although international treaties might foster such a transformation, it need not wait for them or be dependent upon them. Without examining the debate about the green economy in greater depth at this point, let it be said that the economy's role in supporting an ecological transformation has become a hot topic once again. «It's the economy, stupid!» is the cry that slaps down environmentalists everywhere. In traditional Marxist contexts, this used to be called the primacy of the economy. It is facilitated by the ubiquitous perception that the public coffers are empty and that states have limited scope for action – not least because they are highly indebted. And so new innovative financing mechanisms, market mechanisms and business initiatives have sprung up all over the place: «Ecology goes business.» This new economically influenced ecology emphasizes the

opportunities but not the risks. Climate change and biodiversity loss are viewed as risks but also, just as importantly, as «business opportunities».

In the following, this specific aspect of the conflict over the green economy will be presented and discussed in more detail. It revolves around the question of how far a value can be placed on the «services» of nature. For a new economics that hopes to overcome the traditional economy's disregarding or ignoring of nature, this is a key question – and a contentious point, which provokes savage polemic over an impending «monetarization and financialization» of nature.

Offsetting your car: The new economy of nature in action

If you drive a car, are you troubled by the ecological consequences? Look on the Internet and you will easily find solutions to that, which adhere to a fundamental tenet of the new economy of nature: the magic word is «offsetting». The basic idea is simple: Your car emits a certain quantity of CO_2, which is easily quantified. Now it is possible to determine how much must be invested in schemes elsewhere to cancel out the quantity of CO_2 that your vehicles emit. For example, a visit to the website of *clear the carbon – offset company*, gives an instant calculation: «Your Upper Medium (Petrol) Car emits **3.369** tonnes of CO_2 per year.» To offset this amount will cost 40 pounds sterling or about 50 euros.

This money, the customer learns, will then be invested in a project in Brazil which produces energy from rice residues. And if that is not to the customer's taste, other offsetting projects are easily found. Offsetting is also possible by purchasing a certificate. Money then becomes the means of equating the CO_2 emissions abated by a project in Brazil or Vietnam against my petrol consumption. For a small investment – little more than the price of dinner for two in a cheap restaurant in London – you can apparently drive your car for a whole year with a clear conscience without damaging the climate.[3]

3 For details of the example, see: www.clear-offset.com/carbon-offset-car.php

2 Insights into the History of a Difficult Relationship: Economics and Nature

Historically the relationship between ecology and economics has been a difficult one. Once the «global environmental crisis» had been diagnosed, it was rapidly concluded that classical economics was incapable of describing the problem appropriately, let alone providing instruments to counter the crisis. Although classical economics had not simply ignored the material basis of production, particularly in the form of resources, it was heavily concentrated on an economics of scarcity and the associated prospect that problems of natural resources could be solved through price trends: if raw materials become scarce, the price rises and alternatives become economically viable. «The world has never yet run out of a raw material that it has used,» stated the resource economist Robert D. Cairns as recently as 1990.[4] Such an approach only works if the economy is thought of as an open system in which different production factors can be substituted.

Since the 1970s a critique has evolved of the worldview of classical economics, linked particularly with the names Herman Daly and Robert Costanza. «Ecological economics» sees the Earth as an almost closed system; almost, because of course solar energy flows into this system from outside: «For the Earth, the basic rule is: Energy flows through, material cycles within.»[5]

For ecological economics, this is the decisive turning point that was popularized through metaphors like «Spaceship Earth». Ecological economics sets out to couple economics systematically back to the Earth ecosystem, and thereby formulates a far-reaching and influential critique of classical economics: namely, that its characterization of environmental damage as an «external effect» is inadequate. The critique levelled at the status of «external effects» by ecological economics is perhaps its greatest victory. The deficit analysis that «environmental damage is not assigned its correct economic value» has been accepted today in the economic and environmental policy mainstream.

For an understanding of today's controversies over economics and ecology, however, it is important to be aware of certain other debates from recent decades.

4 Quoted after: Endres and Querner 1993.
5 Daly 2004, p. 16.

2.1 A big misunderstanding: The tragedy of the commons[6]

In 1966 Garrett Hardin published one of the most influential articles in recent scientific history under the title «The Tragedy of the Commons», the point of which was to demonstrate that individual resource-usage strategies necessarily lead to an overuse of common resources («commons»). Standard examples are meadows in common ownership or lakes used by fishermen. «Freedom in the commons brings ruin to all» is Hardin's basic and much-cited theory.

Hardin's approach has often been criticized in the intervening time; nevertheless, frequent reference is still made to the putative tragedy of the commons. Hardin's basic error was that he did not distinguish between commons that were farmed collectively by a particular group and public goods like the atmosphere or the ocean which truly are freely accessible. In particular, according to the research of Nobel prize-winner Elinor Ostrom, there is ample proof that throughout the world there are many commonly managed resources (land, lakes, irrigation systems) which function very well and have in no way been ruined by overuse.

Although Hardin later conceded that he ought rather to have written «unmanaged commons», this self-criticism makes little difference to Hardin's underlying thought, since commons, for him, are defined specifically by the fact that they are unmanaged.[7]

The diagnosis that the fundamental problem of commons is the lack of defined property rights has survived the critique on Hardin's theory. For the purposes of an economy of nature, this is quite a crucial point and one which predetermines strategic options. If the problem is seen in the very nature of the commons, then the definition of property rights seems to be the silver bullet.

The «enclosure», or fencing-in of commons in 18th and 19th century England, that has been thoroughly investigated by historians is a general tendency that has been seen time and time again around the world: the commons are destroyed and replaced with agriculture based on private ownership. One of the classic descriptions of the process originates from Karl Marx, who called it «primitive accumulation». Even for Marx, it is a more or less inevitable process in the evolution of capitalism. But in many regions of the world, the course of development was quite different from the English enclosure model. Despite global jubilation over private property, it has not been a total triumph. In particular, forests and land thought to be relatively infertile («marginal lands») are used by local indigenous communities. Often these patterns of use are invisible because the resources are formally declared to be state property. The more recent debate influenced by Ostrom has shown that the sustainable

6 An excellent overview of the Commons debate is found in the anthology edited by David Bollier and Silke Helfrich: The Wealth of the Commons, Amherst 2012. Most texts are available at www.wealthofthecommons.org.

7 «A commons is a resource to which a population has free and unmanaged access: it contrasts with private property (access only to the owner) and with socialized property (access to which is controlled by managers appointed by some political unit» (Hardin 1985, p. 90). Quoted after Ian Angus 2008: Once again on ‹The myth of the Tragedy of the Commons›: a reply to criticisms and questions. Angus provides a very good overview of the debate: http://links.org.au/node/725.

management of commons is a much-experienced reality even in today's world. At least this has gone part of the way to alleviating their invisibility und to demonstrating that commons depend on commoners.

In truth Ostrom's work has refuted Hardin's theory «but it failed to notice that corporations and States, if not individuals, behave in ways that nonetheless produce tragedy».[8] The commons are actually being destroyed, and it is not the fault of their inherent – quasi-naturally endowed – character, but of the strategies underlying the practices of the actors involved.

2.2 Homo oeconomicus – or economic imperialism

The subject matter of economics is anything but clear. In fact, many economic theories imply a certain vision of the human being and ideas about the impulses that drive human behaviour. One well-known definition of economics by Paul Samuelson states that «economics is the study of how men and society end up choosing, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities and distribute them for consumption, now or in the future, among various people and groups in society.»[9]

In the German tradition, we find the following definition of the «economic principle»: «Principle of economic theory whereby rational economic action should be taken under conditions of scarce resources to achieve economic ends (e.g. utility maximization in the private households, profit maximization in the company). Either the purpose is to achieve the greatest possible success with the given resources or to attain a predetermined objective with the least possible expenditure and effort.»[10]

The person who acts in that way is famously referred to as «homo oeconomicus». Gary S. Becker, another Nobel laureate, radicalized this approach: for him, the economic principle can be applied to the entirety of human behaviour. Becker published a large number of studies on diverse questions – for instance, the economics of marriage. A few exaggerations caused some shaking of heads but Becker is considered one of the most influential economists of recent decades and decisively influenced the theory of human capital.

Becker's critics accused him of «economic imperialism». If that is so, his theories provide the theoretical foundation for a diagnosis voiced in many quarters: the economization of the world. More and more aspects of life are structured according to economic criteria. In particular, the tendencies towards economization are manifest in the healthcare system and care of the elderly. The extension of the economic principle into (almost) all spheres of human life is a real tendency, on the one hand, but also a major bone of contention, on the other. Whereas one camp sees the implementation of economic principles as the fundamental condition for a rational structuring of the social system, for the other it represents a dangerous tendency towards the

8 Mattei, Ugo: First Thoughts for a Phenomenology of the Commons. In: Bollier and Helfrich (ed.): The Wealth of the Commons, 2012.

9 Samuelson, Paul: Economics, New York 1948.

10 Duden Wirtschaft von A bis Z, 2013 (own translation).

mercantilization of human relationships. This debate is central to an understanding of the new economy of nature, because that, too, revolves around an expansion of the principle of what is economic.

2.3 The new economy of nature

The economic utilization of nature or natural resources is nothing new – any more than the debate about sparing or sustainable use of these resources. But this kind of economy of nature is always based upon extracting something from nature which then becomes a tradable good: oil is drilled out of the ground; trees are felled and processed into timber. These are familiar economic processes. What is referred to here as the «new economy of nature» has a different thrust. A book by Gretchen Daily and Katherine Ellison brought the term into currency. Published in 2002, it bears the title: *The New Economy of Nature: The Quest to make Conservation Profitable*. The subtitle perfectly outlines the agenda of the new economy of nature. It is no longer about the economics of natural resources but about turning nature itself into a source of profit. Now, instead of exploiting and destroying nature and natural resources, the basis or goal of economic activities should be nature conservation.

This idea is fascinating, so it is hardly surprising that Daily and Ellison attracted many followers. In 2013 two further books were published, with titles suggesting similar approaches: the well-known English environmental journalist Tony Juniper sets out to show «how money really does grow on trees» in his book *What Has Nature Ever Done for Us*; and the president of The Nature Conservancy (TNC), Mark Tercek, calls his book *Nature's Fortune*. The cover text promises that nature will be discussed in the language of business: «assets, risk and innovation». These books, written in everyday language, are the most effective journalistic expressions of a multifaceted scientific and political movement that has fundamentally changed the justification of nature conservation and its strategies in the last few decades. How could the costly business of conserving nature be turned into a source of profit? It is a road paved with all kinds of premises. In order to arrive at this possibility, first of all the concept of «nature» must be thoroughly redefined. And in reality, the view of nature anchored in mainstream society in the last fifty years has undergone a breath-taking transformation. So extensive are the ramifications of this new framing[11] that it is worth casting a brief glance at its genesis.

11 «Framing» in this context means the embedding of a word in a certain semantic context. The new embedding of the meaning of nature is a process that is rehearsed, so to speak, through public use.

Source: Ireen Trummer – Wikimedia

Wilderness in northern latitudes: the Körvemaa protected area in Estonia

2.4 Metamorphoses of nature

The destruction of nature is the obvious core issue of environmental conservation and ecological movements. Barely anyone today doubts the necessity of halting the destruction of nature or mitigating it as far as possible. At the same time, the conflict between the environment and development is as time-worn as it is current. In the run-up to every large-scale project, every motorway construction, we witness a new episode of this eternal drama. But the ground beneath this all-too-familiar battlefield is far from solid. If nature is to be protected, then it becomes increasingly pressing to address the question of what nature actually is. At which point, we immediately find ourselves on difficult terrain. Nature is a complicated concept. Is it in juxtaposition to the human world? Are human beings not part of nature, then? Where do we stand on man-made forests that exist only to be used?

But let us leave the question of what nature is to the philosophers. In our context, the more interesting question is how nature has been seen and will be seen. Actually in the US-American tradition, in particular, the vision of nature as wilderness has a strong influence. Behind the inception of the major national parks was the idea of conserving a largely untouched «pristine» nature and protecting it from humans. The approach of conserving natural landscapes on a large scale in parks and conservation areas was a longstanding guiding principle of international nature conservation. In Germany, Bernhard Grzimek («Serengeti shall not die») stamped his mark on the idea of nature conservation after the Second World War. Grzimek, too, was primarily concerned with conserving a nature that he conceived of as free from humans: «And far, far and wide, only steppe, water, clouds, animals. No people.»[12] People were to be resettled to create the African national parks, a position that was defended at the time by others as well as Grzimek. This idea of nature is vividly animated by the presence of large African wildlife, and transposes the idea of «wilderness» into the developing world.[13]

In Germany itself, the idea of preserving pristine nature failed to make the same headway, for the simple lack of any such nature apart from anything else. It is really astonishing how, in a country like Germany, a form of nature shaped entirely by humans – like the «German forest» – could become a central reference point for environmental movements and nature enthusiasts. David Blackbourn, in his brilliant study *The Conquest of Nature*, described the modernization of Germany as subjugation of natural landscapes. In fact, the Germany that we know is the result of a far-reaching transformation of landscapes, which had begun earlier than, but was certainly intensified in, the 18th century. The fact that nature conservation in Germany refers to this «subjugated» nature is noteworthy – and shows how varied «nature» can be as a point of reference.

12 «Und weit, weit im Umkreis nur Steppe, Wasser, Wolken, Tiere. Keine Menschen.» Bernhard Grzimek: Kein Platz für Tiere, 1954, p. 203, quoted after Torma 2004, p. 108.

13 A brief appreciation of Grzimek's role is found in Radkau 2011, p. 113ff.

Source: Boricuaeddie – Wikimedia

Mangroves, the ecosystem service providers in Puerto Rico

Positions of environmental conservationists who defended «nature» against destruction clearly sustained difficult assaults. They could be dismissed as romantics, enemies of progress and backwoodsmen. To preserve nature as a wilderness, this had to be justified in the intrinsic value of nature, extolling its beauty. In Germany's man-made natural environment, the concern was more with strategies for making the right use of nature or refashioning it properly. Many conservation efforts were also directed at preserving already subjugated or anthropogenically formed parts of nature.

2.5 Nature as a system

In the 1970s a new image of nature solidified, that remains definitive today. That process had its own historical background, of course. The most influential revitalization of the image of nature probably goes back to the British naturalist Arthur Tansley and can be dated to the 1930s.[14] Influenced by the psychoanalytical vision of the human being, he formulates a new way of envisioning nature. Tansley describes it as an integrated system in which energy flows. He called nature an «ecosystem» – an extremely successful word-coinage. Nature can now be considered in terms of its

14 It is said that everything began with a dream in which Tansley shot at his wife. His distress about the dream takes him to Sigmund Freud, whose patient and admirer Tansley becomes; according to: Peter Ayres: Shaping Ecology. The Life of Arthur Tansley, Oxford 2012.

interconnections and functions. This goes far beyond the description and categorization of plants and animals, and creates the basis for a systematic study of the functioning of nature. With that, the foundation stone is laid for ecology as a science.

Tansley's neologism was crucially extended in the 1980s by Paul Ehrlich. In 1983, Paul Ehrlich and Harald Mooney published a book with the title *Extinction*, in which the renowned Stanford University scientists drew attention to the growing numbers of life-forms on the planet that were dying out. What sets their book apart from other publications of the period is not the subject matter but the subtitle: the agenda it describes turns the whole idea of nature inside out. *Extinction, Substitution and Ecosystem Services* is the full title.

Paul Ehrlich is frequently linked to another word coinage: with his wife Anne he had co-authored a book, *The Population Bomb,* which was published in 1968 and became an international bestseller. The Ehrlichs' image that rising human population figures were creating a threat on a par with that of a (nuclear) bomb provoked strong objections.[15] The idea of «ecosystem services» was destined for a different course, and soon became a commonly used term without major debates. No longer is the destruction of nature seen merely as a regrettable evil, but also as the loss of services that are important to human beings and for which easy substitutes often cannot be found.

At the same time, more and more scientists are researching the diversity of the world's species and attempting to pinpoint their enormous number. Even if the individual estimates are debatable, it is becoming clear that a vast diversity of life forms exist in the world. For the evolutionary researcher E. O. Wilson, generally seen as the primary originator of the now-widespread term «biodiversity», this diversity of life is not simply a quirk of nature but a product and a foundation of evolution, and hence also the condition for all life on Earth. This again was brought into focus by Paul Ehrlich in the «rivet hypothesis»: biodiversity as a building block of life is as important as the rivets in an aircraft. Of course one can be removed here and there, but if too many work loose, the plane will fall out of the sky.

Through Wilson and others, such an important idea rapidly became common currency: the great diversity of life forms is a necessary condition for life on the planet.[16] In disseminating the «biodiversity» concept, it is emphasized that the diversity of species cannot be seen separately from genetic diversity and ecosystems – which is why «species diversity» is not an adequate synonym.

Thus, nature conservation became grounded in a much more effective rationale. However, this means that nature conservation cannot be approached in terms of

15 The couple remain active and hold fast to the «population explosion» as a central motif. Both ideas are well summarized in Ehrlich, A. and P., 2013.

16 The emergence and spread of the concept of biodiversity has been well researched and documented by Farnham (2007). The statistics are impressive: as recently as 1987, the concept is mentioned only four times in scientific articles; in 2004 it rises to 4,030. It is noteworthy that this explosion happened after the adoption of the Rio Convention. In 1992 only 162 references are found. A brief presentation of the career of the «biodiversity» concept is also found in Radkau 2011.

preserving a few popular species in isolation; it must rather conserve habitats and ecosystems.

2.6 Nature as biodiversity

In 1990 this new view of nature had consolidated to the extent that biodiversity became the foundational concept for one of the big Rio Conventions, the Convention on Biological Diversity (CBD). The success of the concept of biodiversity is perhaps one of the most astonishing chapters in the contemporary history of ideas. There are several reasons for its fulminant ascent:

- The concept of biodiversity is indeterminate enough to be interpreted and charged in various ways. Wilson himself initially hesitated to use the term because he felt it was too brash.
- Biodiversity suspends the strict division between nature as «wilderness» and nature/culture. High biodiversity can also be found in gardens or in anthropogenically influenced landscapes.
- It is a concept in which nature conservationists find new and evidence-based arguments for the dangers of destroying nature.
- It makes for better description and quantification of nature. Species diversity can be expressed in numerical terms.
- Biodiversity frames nature as a resource. Not only are there natural resources in nature (petroleum, coal etc.), but the diversity of nature itself can be seen as a resource. The term «genetic resources» is spreading rapidly. In this way, nature is explicitly conceptualized as «material».
- In combination with the idea of «ecosystem services», nature as a resource becomes a provider of important services for humans. This idea is gratefully taken on board by nature conservationists and ecologists because it seems to provide them with new arguments.
- Biodiversity as a resource evokes great expectations. A large proportion of global biodiversity is concentrated in the developing countries. In particular, the tropical rainforests are proving to be extremely diverse. For both governments and indigenous peoples, this awakens hopes of new prosperity: the green gold of genes.

It is probably its indeterminacy, and the great potential that thus opens up to attach it to other ideas, that favoured the concept's unsuspected success. Developing countries can dream of a new resource boom, and pharmaceutical groups of legally safeguarded access to «genetic material». Conservationists are delighted about the new underpinning of nature conservation. Despite material of high complexity and full of pitfalls in the detail, in Rio in 1992 a Biodiversity Convention was easier to adopt than a Convention on Forests, which the developing countries in particular feared would impose too many conditions and restrictions on economic development.[17]

17 On this, cf. Radkau 2011, p. 588ff.

Source: Sasata – Wikimedia

A diversity of mushrooms from a mixed forest in Saskatchewan, Canada

«The objectives of this Convention... are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding».[18]

The wording of such objectives reflects the zeitgeist at the beginning of the era of sustainable development. It is the optimism that the conservation of nature and economic development no longer present any fundamental conflict but can be reconciled around the lynchpin of sustainability. Nature conservationists in this context are no longer the eternal messengers of alarm and misery; the type of protection they defend is part of the perspective of sustainable development.[19]

Within a mere twenty years, an entirely new paradigm was thus established for the understanding of nature and nature conservation. As part of this process, there had been a definite rapprochement – at least conceptually – between economics and ecology. The foundation for a new economy of nature was thereby laid. In the years following the Rio Earth Summit, this foundation was extended and developed.

An important milestone in this is the Millennium Ecosystem Assessment (MA), a comprehensive study by the United Nations. It enlarges upon the «ecosystem approach» that already underpins the Convention on Biological Diversity (CBD), and systematically attempts to point out the dependency of human well-being upon functioning ecosystems. Admittedly, the MA sounded warning notes and included an inventory of ecosystem destruction, but nevertheless, it gained landmark status because it finally brought the language of ecosystem services into common parlance.[20] The MA's presentation by the German commission for UNESCO makes explicit reference to this: «The report made it clear that the Earth's ecosystems are increasingly being destroyed. A great success of the report in retrospect is that it firmly established the term ‹ecosystem services›. Nature provides food, water, wood, fibres and genetic resources free of cost; it offers recreation, aesthetic pleasure and spiritual fulfilment, and it supports soil formation and the nutrient cycle. Back in 2005, 15 of these 24

18 www.cbd.int/convention/articles/?a=cbd-01

19 This had already been articulated clearly in the renowned Brundtland Report: «Development tends to simplify ecosystems and to reduce their diversity of species. And species, once extinct, are not renewable. The loss of plant and animal species can greatly limit the options of future generations; so sustainable development requires the conservation of plant and animal species.» (Brundlandt Report, Chapter 2: Towards Sustainable Development, paragraph 13. http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf)

20 «The MA constitutes a critical landmark that firmly placed the ecosystem services concept in the policy agenda. While emphasizing an anthropocentric approach, the MA framework stressed human dependency not only on ecosystem services, but also on the underlying ecosystem functioning, contributing to make visible the role of biodiversity and ecological processes in human well being. Since the MA, the literature on ecosystem services and international projects working with the concept have multiplied.» (http://foreststofaucets.info/wpcontent/uploads/2010/03/The-History-of-Ecosystem-Service-in-Economic-Theory-and-Practice-Journal- Citation.doc.pdf)

ecosystem services examined by the report were already in a condition of advanced or enduring destruction.»[21]

This completes a development that frames nature in language that is absolutely compatible with the economy. Services are familiar as an economic asset in the everyday world, for which we are used to paying a price. A service need not, but can be, monetarized. Many environmental conservationists were barely aware of this economic colonization of language, and even less was it their intention; they were more focused on modernizing the language of nature conservation, finding the right words to «get the message across» about the significance of nature conservation for human life.

2.7 Natural capital

The provisionally final chapter in the economization of the language of nature might be the use of the term «natural capital». A classic definition of the concept was originated by Robert Costanza, who calls natural capital «the extension of the economic notion of capital to environmental goods and services» … «Natural capital is thus the stock of natural ecosystems that yields the flow of valuable ecosystem goods or services into the future.»[22]

The language of nature is now intertwined with the language of economics. Here, again, the use of the term is not bounded with any conceptual clarity. For many, natural capital is a metaphor, designed to show that we can only live off the interest and must not eat into the capital – as any prudent housekeeper knows. On closer scrutiny, however, the term becomes problematic. It throws too much into the one pot: renewable and non-renewable resources, the sink function and the functioning of the overall system. Is all of it natural capital?

In the run-up to the Rio+20 Conference, the term «natural capital» cropped up in countless documents that were based around the paradigm of «green economy». This led to a vigorous international debate in which many developing countries and critical NGOs expressed fears of an economic truncation of «sustainable development», itself already a contested paradigm, and deplored the danger of any «monetarization of nature».

Although a primarily academic discussion and critique of the financialization or monetarization of nature had been in progress for some long time, in 2011 in the

21 www.unesco.de/mea.html (own translation)

22 Robert Costanza: article «Natural Capital» in the Encyclopedia of Earth. www.eoearth.org/view/article/154791/ The full passage reads as follows: «Natural capital is the extension of the economic notion of capital (manufactured means of production) to environmental goods and services. A functional definition of capital in general is: ‹a stock that yields a flow of valuable goods or services into the future›. Natural capital is thus the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future. For example, a stock of trees or fish provides a flow of new trees or fish, a flow which can be sustainable indefinitely. Natural capital may also provide services like recycling wastes or water catchment and erosion control. Since the flow of services from ecosystems requires that they function as whole systems, the structure and diversity of the system are important components of natural capital.»

debates prior to Rio+20 this became an important international topic of controversy. The extremely utilitarian and anthropocentric conception of nature as a service-provider for human well-being is by no means a universally accepted idea. The advocates of the new economy of nature were forced to realize, somewhat ruefully, that concepts like «nature as Earth mother» or «rights of nature» were being brought into debates as a counter-concept. Intensive committee work took place, during which the economic language about nature was largely eradicated from the document that was ultimately adopted. Whatever the ultimate assessment of Rio+20, the Conference turned green economy and the economization of nature into major topics of global controversy.

The economics of ecosystems – the TEEB approach

From 2007 onward, the approach of the MA was taken forward by means of the elaborately designed TEEB study. TEEB stands for «The Economics of Ecosystems and Biodiversity». The implementation of the study goes back to a resolution of the environment ministers of the G8 states. Its objective is to make visible the economic benefits of biodiversity and the costs of biodiversity loss. In this regard, TEEB is expressly intended to go further than the MA's approach. The MA had consciously not made economic valuation – and the associated methodological problems – the central focus of the analysis. This is what TEEB now aims to redress. One of its expressly stated objectives is to quantify the loss of biological diversity in monetary terms as far as possible.[23] Another motivation for commissioning the TEEB study was the (perceived) success of the Stern Report, which was published in 2006 and set out to clarify the economic costs of climate change and inaction to address it. As for the Stern Report, a banker was commissioned with the coordination: Pavan Sukhdev, a manager of Deutsche Bank. Sukhdev became an extremely accessible and eloquent ambassador for the TEEB approach and helped it to garner both media attention and political weight. In an interview, Sukhdev summed up the intention of TEEB: «There's a lot coming to us free. These are goods and services which are not market goods and services. They're in the nature of public goods. But the problem is that we are not in a situation of plenty anymore. We have been eating into this capital, so to speak, that's providing us free, but valuable, services. We use nature because it's valuable, but we lose it because it's free.»[24]

TEEB aims not only at consciousness-raising but also sets out to develop economic and political orientations for action. According to the outline of the TEEB Study, these are now to be complemented with country studies.

23 For instance, as worded in a presentation by Carsten Neßhöver: www.ufz.de/export/data/1/26432_TEEB__nesshoever_short.pdf

24 http://e360.yale.edu/feature/putting_a_price_on_the_real_value_of_nature/2481

In total, eighteen countries or groups of countries have stated their intentions to carry out TEEB studies. They include Brazil, India and South Africa, but also the Czech Republic, Poland and Belgium.

Georgia is a pilot country; a scoping study was published in 2013. It provides an example of the results that can be expected from TEEB country studies. The central importance of hydropower in Georgia is emphasized:

«While hydropower is a renewable resource, it both depends on and impacts upon ecosystem services and biodiversity. It depends on a regular supply of water; both quality and quantity of freshwater is critical for the functioning of this sector. Some of the impacts of the hydropower sector include habitat loss, displacement of local communities and emissions. These impacts however are not always appropriately addressed in current environmental assessments of HPP. To this end, a TEEB study to inform the environmental impact assessment processes may be undertaken to inform Georgia's broader energy policy by considering the environmental and distributional impacts of the Georgian energy sector, and how these impacts might be mitigated through mechanisms such as biodiversity offsets.»[25]

The fact that hydropower is dependent on a regular supply of water is not much of a surprise. But the recommendations clearly spell out the envisaged direction: mitigation of impacts through mechanisms such as offsetting. Options like preventing hydroelectric power plants or exploring energy policy alternatives, that are by all means under discussion in Georgia, have no place on that agenda.[26]

25 www.teebweb.org/wp-content/uploads/2014/01/TEEBScoping-study-for-Georgia-main-findings7wayforward-2013.pdf

26 A brief overview of debates within Georgian society about hydropower and its ecological and social consequences can be found here: www.georgianews.ge/business/26238-khudoni-vital.html

3 The New Economy of Nature – Fields of Action

The current debate frequently revolves around the question of whether economic approaches are tantamount to a monetarization of nature. Opposing fronts have emerged and become somewhat entrenched. Proponents of an economic view of nature have frequently and explicitly rejected the accusation of monetarization. Giving nature a value is not the same as establishing a price, they say. This is certainly correct. The different possible meanings of the term «value» give rise to some of the ambiguities in the current debate. But quite regardless of how the monetary valuation of nature is viewed, the fact is that it is already happening, and it is politically influential.

In fact, the economic view of nature comprises various aspects and fields of action, which entail monetarization and/or imply the creation of market mechanisms:

1. **Quantifying environmental damage**
   Environmental damage is and must be quantified.
2. **Internalizing external effects**
   A classic and well-established theme of ecological economics, which already offers a perspective for political action and coincides in part with the popular demand that the «polluter pays».
3. **Identifying trade-offs**
   This involves assessing the economic aspects of alternative choices: is it cheaper to build dikes or to restore river floodplains?
4. **Economically valuing ecosystem services and establishing payment mechanisms**
   Payment for ecosystem services, PES, has become a great beacon of hope – particularly in climate and forest policy (REDD+).
5. **Incorporating consumption of nature and environmental damage into national and business accounting systems**
   Another pre-existing debate, established under the title «Beyond GDP», in which new strides are now being made.

3.1 Quantifying environmental damage

In 2011 a court in Ecuador sentenced the Chevron petroleum group to a fine of approximately 14 billion euros for damage claimed to have been caused by petroleum drilling in the Amazon region. Chevron refuses to recognize the judgement. Payments to mitigate accident damages are not unusual; the most spectacular case must be the litigation in the aftermath of the Deepwater Horizon disaster. Generally, quantifying economic damages in the narrower sense is relatively straightforward – for instance, the fishers' loss of earnings. But how should the damage to ecosystems be recognized in the compensation settlement? Often the sums are based on the costs of reconstructing the ecosystems. This leads to disputes over details of the calculations – although there can be little dispute that it is desirable to impose fines for damaging nature in such cases. For the alternative – not accounting for damage to nature and ecosystems – is inacceptable, if only because deterrence is then ruled out. Monetary valuation of damage to people is already practised. The German Civil Code provides for compensation for injuries; the amount must be determined for the particular case by court judgements or settlement procedures. Based on such judgements, a table listing the «values» of body parts can be compiled. For instance, genital organs are

Source: US Coast Guard – Wikimedia

Deepwater Horizon in flames, April 2010

quoted at a shockingly low average value of 30,247 euros, whereas compensation of 511,345 euros can be incurred for the loss of both legs.[27]

It is evident enough that such calculations are necessary, albeit arbitrary and contentious. They are also dependent on the solvency of the affected parties and on specific socio-political contexts. The well-established practice of paying damages for pain and suffering has not led to a market for body parts. In the same way, compensation payments for environmental damages may be seen as a limited but necessary form of capturing the monetary value of nature.

3.2 Internalizing external effects

Human activity causes damages that go unaccounted for, offloading the burden onto the community. The inability of classical economics to capture environmental damages is a crux of the critique of ecological economics. A factory pollutes a river and thereby leaves its environmental impacts to the community – which is now saddled with the pollutants.

The consequences are self-evident: the polluters should be held to account, an argument known as the «polluter pays» principle. This encapsulates one of the best researched fields of the economy of nature. Countless studies have quantified «external costs», and the demand for them to be «internalized» has found its way into the political jargon. Nevertheless, a closer look at the results of economic research on external costs does raise a few questions.

Among the most extensively researched external costs are the environmental impacts of transport and those of energy production. The German Federal Environment Agency (Umweltbundesamt, UBA) published a review of research in these areas in 2007 and put forward a suggested «methodological convention». «Environmental economists determine this [i.e. the environmental costs, T.F.] with estimates of so-called external costs […]. The spread of such estimates is very large.»[28] Thus far, then, environmental economics has supplied estimates with very varied results. The UBA is trying to improve this unsatisfactory situation with some recommendations. A central aspect is the use of the standard rate of costs: 70 euros per tonne of CO_2. This figure is meant to express the assumed damages caused by the impacts of climate change in monetary terms (cf. UBA 2007, p. 3). This value corresponds to the recommendations of the EU Commission, which are based on an extensive project series

27 The table is found in an interesting book by Jörn Klare: Was bin ich wert? Eine Preisermittlung, Berlin 2010.

28 Umweltbundesamt: Externe Kosten kennen – Umwelt besser schützen, 2007, www.dfld.de/Downloads/UBA_070427_ExterneKosten-1.pdf. This brief presentation of the methods for determining external costs is a very readable account. Meanwhile the UBA has proposed a new version which is more detailed and complex: Umweltbundesamt: Ökonomische Bewertung von Umweltschäden. Methodenkonvention zur Schätzung von Umweltkosten, 2012, www.umweltbundesamt.de/sites/default/files/medien/publikation/long/4418.pdf (own translation). While we refer here principally to German studies, their results do not differ from those conducted in other European countries, nor from EU studies, and can be taken as well-documented examples.

(ExternE – External Costs of Energy). 70 euros per tonne of CO_2 is now a key number in environmental economics.

For once the number has been defined, the calculations can proceed. Thus the external costs of lignite are stated at 8.7 euro cents per kilowatt and those of heating oil at 6.1 euro cents, whereas wind power with 0.1 euro cents of external costs naturally ranks extremely well. Now it can also be shown that the previous instruments of environmental policy do not adequately internalize the external costs: of lignite's 8.7 euro cents of external costs, only 1.83 are internalized, leaving 6.8 unaccounted for. What is really interesting is that, according to these calculations, emissions trading makes the phenomenal contribution of 0.0009 euro cents to the internalization of external costs – and that was in the year 2005.[29]

Now we cast a glance at the external costs of transport. Again the numerous studies in 2005 were able to ascertain «estimates and average values» and impart an «order of magnitude of external costs» – according to the UBA. The estimated magnitudes are then expressed in terms of a very concrete figure: «A journey by car causes, on average, around three euro cents of environmental costs per kilometre driven.» With a mileage of 10,000 km a year, that amounts to 300 euros. In Germany, some 30% of this is already covered by the eco-tax portion of fuel duty. The internalization of environmental costs would thus cost the laughable sum of around 20 euros per month.

What are the consequences in light of such calculations? It is possible to call for a 22 euro cent increase in the petrol price, and to calculate that the total tax burden on traffic is already higher than its environmental costs, and that car drivers are therefore the «nation's cash cows». This is the view of Germany's automobile club, the ADAC,[30] which also makes very pertinent comments on the «theoretical construct» of external costs: neither «the injured parties have any claim to the damages, nor does it seem probable that the revenues would be employed for the avoidance of negative external effects».

In a more recent survey of methods of accounting for external costs, the UBA also includes a figure for the cost of traffic noise. Accordingly, a car causes costs of between 0.79 and 1.94 euros in the daytime, which rise to between 1.45 and 3.53 euros at night. Irrespective of how the economists arrive at such figures, at any rate they are clearly being calculated and taken seriously. But what does it mean to quantify noise nuisance in terms of an equivalent sum in euros?

29 It is difficult to state precisely what contribution emissions trading makes to the internalisation of external costs, because it depends on the fluctuating price of CO_2 certificates. A study by the DIW and the Frauenhofer Institute finds that for the year 2009, once again, emissions trading made only a very low contribution to the internalisation of external costs: www.erneuerbare-energien.de/fileadmin/ee-import/files/pdfs/allgemein/application/pdf/studie_meeek.pdf

30 www.adac.de/_mmm/pdf/fi_internalisierung_externer_kosten_0508_30407.pdf

Table 1: Average external environmental costs in euro cents per vehicle-kilometre

	Private cars (2005 fleet)	HGVs (> 3.5 t)	Method	Source
Climate costs	1,2	4,8	Methodological convention 70 €/t CO_2	UBA Infras Project, Fifo, 2007
Air pollution	0,5	5,6	Health, material damages, harvest losses according to ExternE (EU Commission 2005)	UBA Infras Project, Fifo, computed by IER
Nature and landscape	0,4	2,0	Costs of restoration, water purification etc.	Infras/IWW (2004), own conversion
Noise	0,8	5,0	Health damages, rent price discrepancies	Infras/IWW (2004), own conversion
Sum of environmentally relevant external costs	2,9	17,4		

Source: www.dfld.de/Downloads/UBA_070427_ExterneKosten-1.pdf; own chart

These examples aim to give a brief insight into one of the hands-on uses of environmental economics so that some aspects of the popular formula of internalizing external effects can be scrutinized more closely: the internalization of external effects only works when costs can and should be internalized. In many environmental conflicts, however, the parties are not actually interested in internalization. Should the costs of burning down the rainforest be internalized? Or the costs of nuclear energy? In such conflict situations, internalization strategies are of no help. Internalization only works if the damage (for example, environmental pollution) is ongoing.

Internalization is meant to correct false price signals. Hence, in the UBA's opinion, it is no wonder that excessive consumption takes place if some particular usage of the environment is too cheap. But will increasing the costs for car drivers by 300 euros per year (to cite the highest bill) really set the right signals? Here, internalization would only perpetuate the prevailing structure of the transport sector. The hope that «correct» prices lead to «correct» governance outcomes is questionable.

In order to internalize, it is necessary to monetarize. Economists calculate monetary values – for everything, if need be, as the example of noise shows. These monetary values are based on complex and often debatable assumptions – which can no longer be identified from the calculated figure. The apparent objectivity of such a figure masks the often controversial normative assumptions used in generating it.

A further issue is that the range of the figures calculated is often very broad. A gross example is the assessment of the external costs of nuclear power. The range is between 1 and 100 euro cents per kWh. Even for electricity generation from fossil fuels, the figure is between 1 and 25 euro cents. Do these figures really constitute a serviceable basis for political decisions?

How much is a tonne of CO_2 worth?

Ever since CO_2 was identified as the most important greenhouse gas, reducing its emission has been a central tenet of climate and environmental policy. In fact, a great advantage of CO_2 is that it is easy to measure. But how can economics convert CO_2 into a monetary value? In the context of internalizing external costs, the damage caused by CO_2 would have to be quantified. For this purpose the UBA, following the recommendations of a research project set up to evaluate existing studies, proposes using the value of 70 euros as a standard unit of cost. The 70 euros are deemed to reflect the «state of knowledge among recognized experts».

Another common approach is to determine the costs of avoidance, i.e. the costs that arise if CO_2 emissions are reduced through climate protection measures (e.g. building insulation). Here the «official» value of the UBA is now (2012) 77 euros per tonne of CO_2. That figure is of the same order of magnitude as the costs of the damage, for if the inflation rate is taken into consideration, then the value of 70 euros (2007) has now increased to 83 euros.

The American economist Frank Ackerman says this may be the «most important figure they ever heard»: 33 US dollars, the costs of CO_2 damage set by the US government, known as the Social Cost of Carbon (SCC). Application of the SCC accounting value is intended as guidance for state regulation. It is based on complex calculations, but is then explicitly a political stipulation which cannot be set too high or too low if it is to achieve its effect.[31]

Another price is easily obtainable: it is the market price for European Emission Allowances. In the year 2013 it fluctuated between 5 and 6 euros per tonne. For this price, companies can purchase allowances covering their CO_2 emissions. Most companies have received, and many manufacturing companies continue to receive, a certain volume of these allowances free of charge. When these allowances have been used up, companies have the possibility to purchase additional allowances or offsets, mostly from the CDM, to cover these additional emissions.

In the context of a new economy of nature, CO_2 is not only crucial because of its importance as a greenhouse gas – it is also easy to measure, and in no other area have the costs of harm or avoidance been researched so intensively.

Nevertheless in the prime economic zones of developed countries, the politically specified values diverge from each other substantially. And if the calculated figures are taken even half-way seriously, the market price is not an appropriate steering instrument; in other words, the price signal it transmits is completely false.

Furthermore, figures like the very low 33 US dollars are by no means unquestioned. They are based on assumptions about climate change that are beset with

31 Cf. in this regard the very readable overview by the World Resources Institute: Greenspan Bell, R./Callan, D. 2011.

Source: Marc St. Gil † – Wikimedia

High levels of carbon dioxide from the incineration of old batteries in Texas, USA

a high degree of uncertainty because they relate to the future. They presume that, even for questions as complex as climate change, cost-benefit analyses can be produced with a certain degree of precision and presented in terms of monetary values.

In the US debate, Eric Posner points out that decisions about climate change are far from «data driven» but involve «contested normative issues».[32] Should these really be replaced by monetarization? Do we really want to delegate normative decisions to economists? Or to put it even more bluntly, will it work at all? Will the coal lobby be forced to its knees by cost-benefit analyses?

The monetarization of these issues renders the normative decisions non-transparent. Although the experts can comprehend and verify them in the literature, participants in the public debate do not usually see beyond the figures (stated in terms of money values).

32 Ibid., 10.

Quelle: Joeb07 – Wikimedia

The examples cited already highlight some of the dilemmas of the economy of nature. But whatever we may think of the monetarization of damages and costs of avoidance – to some extent it is already being practised and referred to in current debates. And for this, there is indeed a powerful argument: using debatable figures for environmental damages is still better than not taking them into account at all. Particularly in the discourse about the transition to renewable energy systems, it would be fatal to overlook the ecological damage caused by fossil fuels. But then again, whether the very low external cost of 6.8 euro cents for lignite really sets an appropriate signal for an environmentally friendly energy policy is questionable.

Environmental damages should be made visible, and this can contribute to the transparency of political decisions. But they need not always be expressed in terms of monetary values. For instance, research has also quantified the number of possible casualties (rising mortality) arising from the use of fossil energy sources. Do lost lives only count after they have been expressed in monetary values?

Fired landscape: Open-face lignite mining in Saxony, Germany

Economics of life and death

Pollutants kill – or more accurately, air pollutants heighten the risk of mortality. In order to capture external effects, the monetary valuation of an increased mortality risk is fundamental. To this end, the «value of a statistical life» or «value of life-year lost» must be captured. Economists know that they are entering an ethical minefield here, but give assurances that it is not a matter of quantifying the value of human lives but of «changing the probabilities of mortality [...]. Willingness to pay to change the probability of mortality or sickness is therefore to be included in the estimation of environmental costs».[33]

33 UBA 2012, p. 28 (own translation).

How do I account for the future? Discount rates

The debate about discount rates is pivotal for the economic valuation of climate change – and, at the same, time utterly incomprehensible to most non-economists. Essentially it is about how to value the future. Thanks to technical progress, computers are cheaper today than twenty years ago. Economists therefore assign a lower value to the prices of goods in the future than in the present. This rule is extremely relevant when it comes to quantifying the economic costs of climate change. If we just wait a few more years, the costs of reducing vehicles' CO_2 emissions could be lower. The Stern Report assumes a relatively low discount rate of 1.4%, a move that provoked considerable objections. A higher discount rate would substantially lower the costs of combating climate change. The discount rate is set on the basis of assumptions about the future. Economists, just like other people, do not necessarily agree with each other about the future; moreover, they have not accurately predicted it in the past. This should never be forgotten when figures quoted by economists are presented with an aura of scientific certainty, as if they were as reliable as the result of an addition sum.

3.3 Trade-offs

In the 1980s the New York administration faced a crucial question. What should be done to secure the future water supply? Two alternatives were on the table: building a new purification plant or investing in the conservation of a water catchment area. Economists were able to work out that investing in the water catchment area was the cheaper option. Thus, a rational basis was found for the decision, which of course went in favour of the water catchment area.

The case of New York is cited so often that the suspicion almost comes up it is one of the few such clear cases.[34] At all events it is almost an ideal-typical demonstration of what is understood by ecosystem services and why this concept arouses such high hopes. In the New York example, nature conservation and economics are perfectly combined. The fact that this works so well is due in part to a new view of nature. It is understood as the provider of services – in this case, the provider of clean water. There are also alternatives for providing these services, for which the economists can now quantify the cost dimension. Here they find themselves in old familiar territory: the calculation of trade-offs, which in this context means weighing up the costs and benefits of a decision.

The case of New York also clearly shows what purpose can be served by quantifying (the services of) nature: namely, that of giving visibility to the economic consequences of decisions. To that end, nature does have to be monetarized, but that in no way means that nature becomes a commodity or that markets have to be created for it.

34 This is found not only in Juniper 2013, but also in Daily 2002.

The view of nature has indeed changed totally. Instead of damages or costs of avoidance, we now pay attention to the wonderful services that nature provides for human beings: bees are fundamental for the fertilization of plants, and hence for agriculture; birds eat pests, and trees supply us with fresh air and prevent erosion.

The description quickly resonates with a particular analysis: we disregard the services of nature; we take them too much for granted – because they are free of charge. «Nature sends no bills». The bill is only issued when we have to compensate for the loss of nature's services, by means of water treatment for instance or air filters.

This narrative is plausible and attractive. In his most recent book, the famous environmental journalist Tony Juniper has gathered countless examples of what nature does for us. Be they animals like shellfish or vultures, or ecosystems or swamps – they all work hard for us, and are treated badly in return. This is not rational, especially considering the economic aspects. We do not understand the value that nature bestows on us – this is the message of Juniper and many others – nor that «money really does grow on trees», according to the pithy subtitle of Juniper's book.

It is not easy to raise objections to this catchy narrative, given the optimistic message that it propounds. To begin with, a few aspects of this narrative should be scrutinized more closely, for not all examples are as unequivocal as the famous New York water supply. Another much cited example of rendering ecosystem services visible are mangrove forests. By making the entirety of ecosystem services provided by mangroves visible, it can ostensibly be shown that conserving them generates more monetary value than destroying them (to establish shrimp farms, for instance). But this only works if the extensive ecosystem functions and the social significance of mangroves (erosion protection, conservation of biodiversity, jobs for traditional fishers) are indeed monetarized. Economic valuation has to reduce the complex function of mangroves to a monetary value, and then compare it with another. In the process it must not be forgotten that quantifying complex systems is a matter of considerable inexactitude, and that even the profitability of the enterprises that replace the mangroves can be variable. What if shrimp aquaculture is combined with a resort hotel? Or if oil is found? Should the protection of essential ecosystems really depend on their economic profitability? And can the champions of nature really be so sure that the outcome will always turn out as well as it did for the New York water supply?

Tony Juniper cites a different example of nature's economic superiority: the Nakivubo Swamp near Kampala, the capital of Uganda. Its ecosystem services of wastewater purification and nutrient retention were quantified at 1.75 million US dollars per year, an astonishingly low figure but luckily slightly below the annual costs of a water treatment plant (2 million US dollars). «On the basis of these kinds of economic calculations plans to drain the swamp were reversed.» But in this case, there is no happy ending as yet: «Since then, unfortunately, the wetlands have suffered degradation due to industrial development and other pressures».[35]

35 Juniper 2013, p. 174.

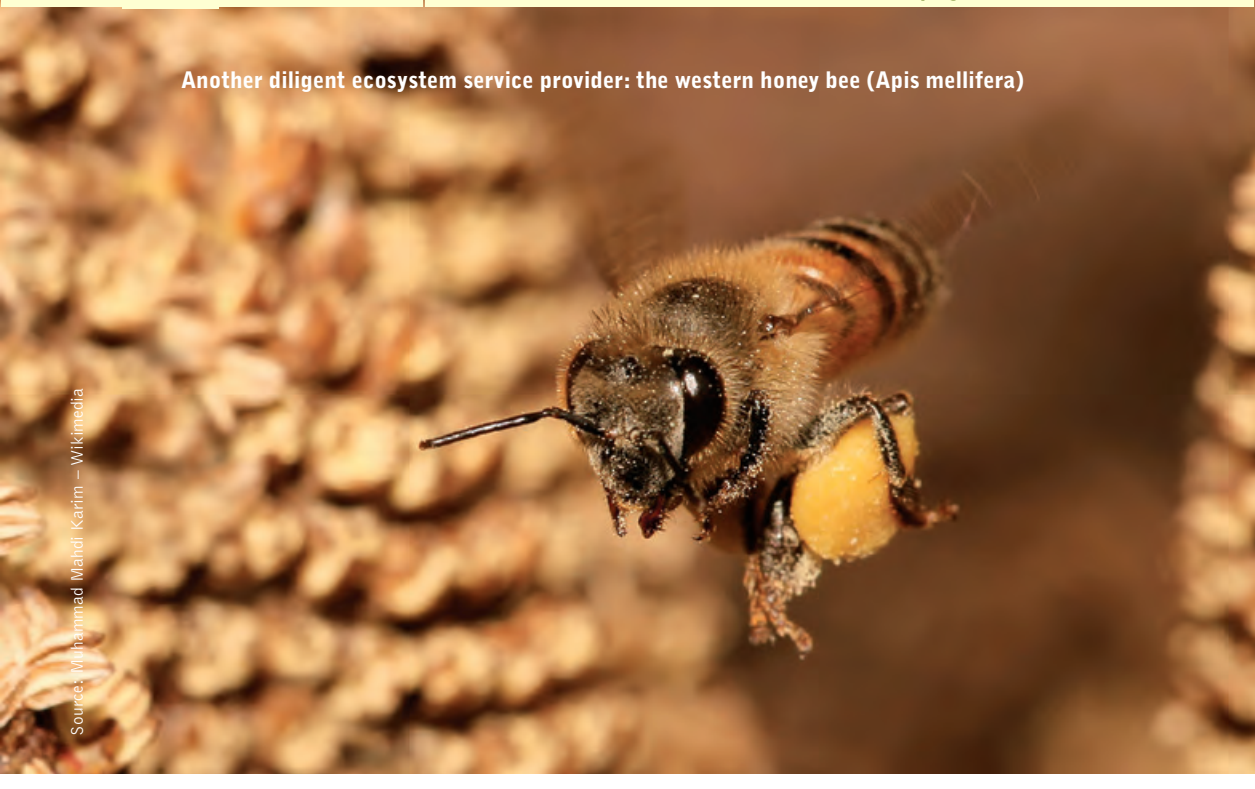
The lessons from this example are not as clear cut as in the New York case. With only a small efficiency gain, the water treatment plant would have been more cost-effective. The enactment of decisions in favour of nature conservation depends on a range of factors. How can the influence of powerful stakeholder groups be reined in? What should happen with «illegal» settlers? How high are the costs of resettling them?

Vultures as service providers

In the 1980s it was observed that Indian vultures were dying in large numbers, which soon brought the species to the brink of extinction. The cause was traced to a commonly used painkiller, diclofenac (brand name: Voltaren), which was being fed to cows; when vultures eat these cows, they die. The loss of the vultures' «service» led to a great increase in the number of stray dogs, and hence the spread of rabies. Massive efforts were then required to reduce the numbers of dogs. It was possible to quantify the economic costs of the loss of the vultures: studies arrive at figures of over 30 billion US dollars. This figure is sufficient to show that the costs of substituting diclofenac with a drug harmless to vultures are considerably lower than the consequential damages arising from the loss of the vultures.

The example is instructive: it shows that economists can quantify many things by making assumptions. The results may be controversial or doubtful but they produce a quotable figure, which is something that people believe they can understand. In no way does the figure quoted here pave the way for monetarization of the vultures. Even in future they will provide their services for nothing. Nor will anybody be able to privatize the vultures; they will carry on scraping their existence as a «public good». Nor is anybody demanding the 30 billion US dollars from the producers of diclofenac. Yet economic analysis has made the value of the vultures visible. Was that necessary? What mattered most for the purpose of political decision-making was the discovery of the link between diclofenac use and vulture death. The Indian government immediately banned the use of this drug in cows. Economic analyses were not relevant to the political decision-making; essentially they were of most use to the economists themselves. Another interesting observation is that the problem is definitely not caused by overuse of the vultures but by unrestrained use of medications.

Whoever looks at the world through the lens of «ecosystem services» sees services everywhere that nature provides for human beings. Obviously sufficient regard is not always given to these services. Economic valuation is now hoped to help change this, but to that end, the complex and often still unrecognized functions of nature have to be converted into much more specific services. Nature will then be constituted as economically competitive. Such a perspective will concentrate on the economically comparable aspects of nature and tend to neglect others: the CO_2 stored by trees is



Another diligent ecosystem service provider: the western honey bee (Apis mellifera)

Source: Mohammad Mahdi Karim – Wikimedia

easy to quantify and to include in trade-off-based considerations: is it cheaper to plant tree plantations or to fit new filters in factories? But aspects such as the conservation of biodiversity, the value of nature's beauty or cultural assets are considerably harder to incorporate into such calculations. In other words: the nature in the trade-off calculations is a specific kind of nature, modelled from an economic perspective. This may be desirable for good reasons but it should always be kept in mind. The underlying question for strategies of nature conservation is whether they really want to consign themselves to dependency on economic trade-off calculations.

Whatever the case may be – economic calculations continue to be made, and trade-offs calculated. There will be a great temptation to make use of them in debates, despite doubts about their conceptual validity. And as long as they serve to render economic aspects of decisions visible, they can also be useful – if we remain conscious of the limitations of these calculations. Just one look at popular examples of ecosystem services research shows that, often, economic calculations are not in fact the basis for decisions.

Probably the most prominent service providers in the literature of the new economy of nature are the bees. Their «pollination service» is a constantly cited example of ecosystem services and its value is quantified. In 2012, the Helmholtz Centre for Environmental Research (UfZ) Leipzig assigned a value of 350 billion US dollars to pollination services in 2009;[36] French researchers came up with a value of

36 www.ufz.de/index.php?de=30403

200 billion euros: «Economists sound the alarm: if the current bee death continues unabated, it would cause massive financial losses.»[37]

In the past this would have been expressed differently: pollination by bees is fundamental for nature – or for ecosystems. No more bees, no more men – was Einstein's much-quoted turn of phrase. Reducing fundamental functions of nature to ecosystem services has done little to help the poor bees. Although their service is in demand and its value avidly quantified, they are dying in droves. The crucial question is not how much the bees' service is worth, but what might be the causes of the phenomenon called colony collapse disorder (CCD). After long debates, scientists and environmentalists now tend towards accepting a complex of causes, one of these being the use of pesticides. Three of these substances were prohibited by an EU Regulation in 2013. Two affected corporations, Bayer AG and Sygenta, have taken this to appeal.

However popular it is (even for Greenpeace) to quote the figures for bees' ecosystem services – when it comes to the debate about CCD, these statistics are not crucial, not even important. For the problem is clearly not that CCD is being downplayed. The critical point is identification of the causes. The economic valuation of these services is also based on calculations of how expensive pollination might be if done by people. Bees do it more cheaply. But does that really amount to good terrain for debates and decisions? If technical advances or extreme poverty suddenly make pollination by people economically competitive, is the game up for our ecosystem service providers? If genetically modified bees can tolerate the pesticides and provide the services more efficiently – what conclusions will be drawn? The example of CCD makes it clear that economic valuation of the service of «pollination» unnecessarily steers ecological debates onto economic terrain. The economic dimension is taken up gladly, however, because it seems to be an additional argument that helps the «good cause», the battle against CCD. But this means accepting a basis for argumentation that is problematic: the legitimization of nature on grounds of efficiency.

3.4 Ecosystem services and innovative financing mechanisms

Calculations of environmental damages or «ecosystem services» are not just intended to make hidden and suppressed aspects visible. Even the choice of wording, «ecosystem service», alludes to the experience that services (like haircutting or issuing passports) have a price, and must be paid for. This entails an expectation that at least for a few ecosystem services, it is possible not only to establish payment systems, but also to have them financed by markets. The German Federal Ministry for Economic Cooperation and Development (BMZ) articulates the background to the approach in prototypical form: «Although humanity is dependent on these services of nature, no prices or markets exist for them. They are barely perceived as an economic good, and the estimation of their value has long been very low. As a result, biodiversity has

37 www.welt.de/wirtschaft/article118031104/Bienensterben-vernichtet-bis-zu-300-Milliarden-Euro.html (own translation).

come under severe pressure from population growth, rising living standards, modified dietary habits, urbanization and climate change. Many ecosystems are already noticeably degraded – with serious consequences for humankind».[38]

This formulation spells out the context and intention: it is not just the invisibility of the values but the lack of prices and markets that are deemed to be the root causes of the «pressure». Such a diagnosis makes the therapy implicitly clear: establishing prices and creating markets.

The multitude of approaches aimed at the creation of new markets and forms of financing have come to be known as «innovative financing mechanisms» (IFMs) or market-based instruments (MBIs). Interest in these is promoted by a specific context: «The outset situation is clear: there is a major gap in financing for the conservation of biological diversity worldwide» states the report about an expert workshop with the programmatic title «Innovative financing mechanisms for the conservation of biodiversity: Win-win situations for environment and economy.»[39]

Here the constantly recurring fundamental elements of the discourse on innovative mechanisms come together: public funds are inadequate, and new markets can create win-win situations. Nature conservation is sprung from its trap of conflict and becomes a source of profit. It is an attractive message for many, and offers the prospect of a way out of old dilemmas. But we know from other areas that while desperation and hope are understandable drivers of human action, that alone is not enough to make the paths taken legitimate or successful. Three mechanisms in the complex field of innovative financing mechanisms and MBIs will be considered more closely below.

PES – Payment for ecosystem services

The abbreviation PES is in global use for «payment for ecosystem services» and has become highly popular and pervasive. There is, however, a certain amount of confusion about the concept and its application, because PES is used both for very concrete mechanisms (e.g. the PES system in Costa Rica) and as a category for the totality of environment-based payment systems. Nevertheless, a near-classic and repeatedly cited definition of PES exists, formulated by CIFOR staff member Sven Wunder. Accordingly, PES is a voluntary transaction in which a well-defined environmental service or form of land use is bought by at least one buyer from at least one provider who effectively controls service provision.[40]

To begin with, Wunder's definition relates to private actors: a farmer is paid by a water company not to use pesticides. The buyer of the service can be the state or

38 www.bmz.de/de/was_wir_machen/themen/umwelt/biodiversitaet/arbeitsfelder/neue_ansaetze (own translation).

39 The workshop was organized in 2012 by Deutsche Umwelthilfe and the Global Nature Fund: www.business-biodiversity.eu/global/download/%7BMIUYOLWTIU-362013104822-WRUXJ-AQWBH%7D.pdf

40 (1) A voluntary transaction where (2) a well-defined environmental service or a land use likely to secure that service (3) is being ‹bought› by at least one buyer from (4) at least one provider effectively controlling service provision (5) if and only if the environmental service provider secures service provision (conditionality) (after Wunder 2005, p. 3)

a public organization (such as a municipal water supplier). According to Wunder's definition, PES can be market-based, but need not be. Essential to the definition, however, is payment for the ecosystem service by a user («user based»).

PES is generally presented and discussed in the context of «market-based instruments» (MBIs). The title of a book published by World Bank staff member Stefano Pagiola, which is a compilation of PES case studies, may be seen as symptomatic of this trend: *Selling Forest Environment Services: Market-Based Mechanisms for Conservation and Development.*

Costa Rica is the standard example to demonstrate the feasibility and success of the implementation of PES systems. In the usual descriptions, the PSA system (PSA is the Spanish abbreviation for PES) of the Central American state is presented as market-based. More recent evaluation of Costa Rican experience yields a more complex picture, however: accordingly only around 3% of areas under the PSA programme are financed according to the «user pays» principle, which is the hallmark principle of PES.[41] The most important financing sources for the PSA programme in Costa Rica, according to more recent studies, are a fuel tax (approximately 40%) and international cooperation (approximately 45%). According to these analyses PSA is more of a «subsidy in disguise» than a success story for MBIs. An additional finding points in a similar direction: around 97% of all PES systems worldwide are financed with public funds;[42] for the most part, this is financial compensation for the conservation of drinking water catchment areas. The difficulties of establishing PES as a market mechanism for «ecosystem services» are obvious: the «services of nature» are too complex to be organized in market form. In most cases they are bound to a specific local context. Furthermore, rather complex arrangements with a high regulatory workload are necessary in order to create PES systems.

The question naturally arises as to how this discrepancy between market rhetoric and practical experience with the implementation of PES systems can be explained. Again we are seeing here the attempt to establish a new narrative. The decisive criterion is not the empirical basis, but rather the perspective that opens up for the future. One direct consequence already is that international development funds are being diverted to these supposedly innovative instruments on a massive scale. So is PES just a case of the proverbial «old wine in new skins»? Not quite, because most PES systems are not blanket subsidies to sectors but do try to couple the transfer payments to a specific ecosystem service. Even if this is not «market-based» in operation, it still opens up broad scope for the economic valuation of nature's functions (alias ecosystem services), and/or agricultural and forestry practices.

PES can drift even further from a market-based instrument if it is underpinned by the definition of the FAO (United Nations Food and Agriculture Organization): «PES transactions are voluntary operations through which a service provider is remunerated by or for the account of beneficiaries of these services, for agriculture, forestry,

41 «Direct users financing from all sources has funded less than 3% of the area enrolled in the PSA Program» Blackmann/Woodward 2010, pp. 1626–1638.

42 The figure is taken from a global survey of PES systems: Vatn/Barton et al. 2011.

coastal or marine management practices from which a more constant provision of services is needed than it would be without such types of payments.»[43] This broadly framed definition expressly includes the entire range of agricultural subsidies that are coupled to environmental criteria.

As a result, a scheme like Germany's KULAP cultural landscape programme now counts as a PES system. KULAP is an agro-environmental programme that supports environmentally benign agriculture and measures for the conservation of cultural landscapes. It is a classic subsidy programme tied to ecological criteria. Subsidies of this kind have been called for over and over again, specifically on ecological grounds, and welcomed. The critique of PES as the economization of nature is unlikely to be directed at these kinds of support programmes, which have been colonized by the economic rhetoric of ecosystem services through no fault of their own.

Thus Sven Wunder has begun to talk about «PES-like» systems. Hence, the debate about PES must be taken with a certain amount of caution: market-based PES systems are few and far between; PES is more the marker of a new rhetoric than a well-defined practice.[44]

Worth of woods

For the construction of a new motorway – the M6 near Birmingham, England – it was necessary to fell 10,000 mature trees. This would be compensated by replanting 1 million new saplings – a typical example for the practice of offsetting in the course of larger scale construction projects. For the UK's Secretary of State for Environment, Food and Rural Affairs Owen Patterson the case is clear-cut: «The point about offsetting is it will deliver a better environment over the long term.»

In order to come to this conclusion, we need to balance the «value» of 1 million saplings against the «value» of 1000 mature trees. But can that be done, and does it make sense? «Biodiversity offsetting relies on one central proposition; that an administrative exercise can be used to assess the value of a habitat and the cost of its loss. In its current form it is a flawed proposition. As the chair of the environment audit committee, Joan Walley MP, noted: ‹How do you put a value on 1000 years of woodlands? You can't wait 1000 years for a new woodland to grow.›»[45]

43 After GIZ 2011.

44 A very good and critical overview on PES can be found here: http://wrm.org.uy/articles-from-the-wrm-bulletin/section1/pes-turns-into-permission-for environmental-shattering.

45 The quote is taken from a worthwhile article by Matthew Wilson in the Financial Times of 14 February 2014: «How efforts to cut red tape threaten Britain's wild habitats»; (www.ft.com/intl/cms/s/2/3d8e4e78-8e8b-11e3-98c6-00144feab7de.html#axzz2tna3nA5U).

Simply forest, in this case in Austria

Source: Johann Jaritz – Wikimedia

REDD+: Beacon of hope for an economy of nature?

While the rhetoric is exuberant, a glance at the reality of PES is somewhat sobering. PES systems which are relevant, extend beyond local contexts and are based on market mechanisms are nowhere to be seen. Therefore REDD+ has now become the mainstay of hope for the creation of a larger-scale PES system. REDD+ stands for «Reducing Emissions from Deforestation and Forest Degradation in Developing Countries» and has been part of the negotiations towards a climate agreement since the Bali Climate Change Conference (COP 13, 2007). The Stern Report in particular brought attention to bear on the significance of deforestation for global CO_2 emissions.[46] Reduction of deforestation, the Stern Report recommended, could be a way to reduce global emissions rapidly and at low cost. At the same time, the possible inclusion of REDD+ in a global climate agreement holds out the prospect that sums of several billion US dollars per year could flow into forest conservation. To accomplish that, however, REDD+ would have to be associated with an international CO_2 market. Companies or states in industrialized countries could then achieve their reduction targets by purchasing forest certificates – a logic referred to as «offsetting»: continuing pollution in the industrialized world could be mitigated by the purchase of forest certificates.

The implementation of this fundamental and simple idea has proved complicated, however. In the course of wearisome negotiations REDD+ has lost some of its original vitality. The supposedly low-hanging fruits of forest conservation were not within such easy reach after all, and the globally agreed reduction targets that are fundamental to the logic of «offsetting» are not in view. Nevertheless, the so-called «Readiness for REDD» process is being driven forward and financed on a massive scale by the World Bank, UNDP and bilateral actors like Germany's state development bank KfW and the Norwegian government. All over the world, REDD+ projects are springing up, normally financed by international development cooperation money. Without a doubt REDD+ is the largest initiative by far to establish a worldwide PES system.

This is not the place to go into detail of the extensive and by now somewhat confusing REDD+ debate. From the perspective of the new economics of nature, REDD+ is a case of payment for ecosystem services: the forest's service of «CO_2 storage» is set to be valued in monetary terms. This can be done with relative ease because the CO_2 stored in the forest can be measured and priced. What is economically interesting, however, is not this «stock» but rather the reduction of the «flow», in other words the measurable reduction of CO_2 emissions by reducing deforestation. The same is true of REDD+ as has been said about other PES systems: payment need not be based on a market mechanism, but particularly for REDD+ the hope vested in a market-based mechanism was (and remains) key, for it is the only way in which amounts in the billions can be realized and sustained over time.

46 Stern and the 2007 IPCC Report estimated the share of total CO_2 emissions attributable to tropical forest deforestation at around 20%. These figures, though cited repeatedly, are no longer up to date. The share attributable to deforestation might be closer to 10% according to more recent studies. A brief overview of the debate is found here: www.washingtonpost.com/blogs/wonkblog/wp/2012/06/23/solving-the-mystery-of-tropical-deforestation-in-two-maps.

If such sums were achieved and sustained, REDD+ could realize a fundamental and long-cherished hope vested in the new economy of nature: that the conservation of nature (in this case the forest) will turn a profit. All popular introductions to REDD+ lay great emphasis upon this aspect. Hitherto only forest degradation was economically viable (logging, conversion into pasture or arable land); now, REDD+ enables conservation of the forest to «pay off».

This idea helps to construct a simple and almost irresistible narrative which has contributed to the popularity of REDD+ and quickly brushes its critics aside as inveterate sceptics. Nevertheless, it must be permissible to ask: does it actually work? From the perspective of the economy of nature, the question of opportunity cost is pivotal – and hence a central theme in environmental economics. Opportunity costs quantify the revenues lost by refraining from the use of resources. In the case of the forest, the non-use of the forest (its conservation) must be weighed against possible use of the same land for crop growing, livestock farming or mining. REDD+ would work optimally if the revenues from the monetarization of the ecosystem service of «CO_2 storage» were higher than the expected profits from other activities. In 2010 the World Bank – a body totally beyond suspicion of any hostility towards REDD+ – published a manual on REDD+ and opportunity costs. On the basis of a synthesis of estimated opportunity costs, the critical question it poses is this: can REDD+ programmes offer sufficient incentive for the conservation or restoration of forests? «The quick reply: it depends on the international carbon price, the type of land-use change and the different types of REDD+ costs that a country will face in order to reduce emissions.»[47] Examples of opportunity cost calculations to date then lead to the conclusion that for intensive agriculture on productive soils, REDD+ is unable to provide adequate incentives. Only in the case of extensive livestock farming or «shifting cultivation» («low-value agriculture») do the opportunity costs tip the balance decisively in favour of REDD+. And in between lies an area of «mid-value agriculture», on which the verdict is uncertain. Since most studies that were evaluated in the manual had been completed by 2010, they will have assumed a CO_2 price of at least 10 US dollars. Now, in view of the drop in the CO_2 price, the ranks of competitive REDD+ projects are likely to have been decimated.

This appraisal from the mission control body for REDD+ as an economic mechanism is sobering, to say the least: on that basis, key «drivers of deforestation» like the soya and palm oil industry will never even be reached. One target group of definite interest for REDD+ are indigenous peoples and local communities practising traditional forms of agriculture. In most cases, however, they are not the most important «drivers of deforestation» by far; rather, they are often custodians of the forest. A look at the world of REDD+ projects shows that this target group is increasingly becoming the typical REDD+ clientele. In other words, an economic mechanism that was intended to create incentives to refrain from deforestation is increasingly turning into a monetary incentive for forest conservation. In this context, many worthwhile

47 World Bank 2011, p. 13. http://wbi.worldbank.org/wbi/Data/wbi/wbicms/files/drupal-acquia/wbi/OppCostsREDD+manual.pdf

measures and projects could be financed under the REDD+ label which would strengthen the rights and opportunities of indigenous peoples and local communities. Not least for that reason, the debate surrounding REDD+ is often complicated. That it bears the REDD+ title does not necessarily say anything about the character of the concrete project. What is much more problematic is that the promotion of indigenous peoples and local communities is being made ever more strictly dependent upon being integrated into a REDD+ scheme. But that means that any projects and funding which receive the REDD+ label must achieve a measurable reduction (or storing) of CO_2. Irrespective of the source of financing, REDD+ is geared towards the concrete, verifiable results of a project (or a national policy); «result-based financing» as this is now known in the international jargon. If there is to be any point in even talking about REDD+, a project must deliver measurable, quantifiable and monetarizable services. This will require the creation of a system of measurement, reporting and verification (MRV) which is at least internationally comparable – which is probably the most contentious and difficult point in the international negotiations on REDD+ at the present time.

Although the prospect of REDD+ rapidly mobilizing large sums of money (including private sector funding) through an international financing mechanism under the framework of the UN Convention on Climate Change has not yet materialized, the «Readiness for REDD» process is already running at full throttle. Part of the process is the voluntary market for REDD+ certificates. Firms or private individuals, for instance, who want to neutralize CO_2 from flights or events, can also do so by acquiring forest certificates. REDD+ projects are increasingly offering certificates of this kind; the most important certification is the Voluntary Carbon Standard, VCS. Projects certified by the VCS can then offer VCUs, Verified Carbon Units. In the year 2012 two megatons (MT) of CO_2 VCUs were issued, a very small share of the voluntary CO_2 market. Forest credits only account for about 9% of the total voluntary market in all.[48]

Nevertheless, REDD+ has brought lasting change to the forest and development policy landscape. At least 3 billion US dollars have been committed to fund the REDD+ process, REDD+ strategies are being drafted in almost all forest countries, and projects are springing up all over. The financing of activities in the forestry sector is appreciably coming to depend on their being at least «REDD-like», which means being able to demonstrate measurable CO_2 reductions. The mainstreaming of REDD+ is in full swing, with one dramatic consequence: more and more indigenous peoples and local communities are dependent upon a financing mechanism that requires them to deliver measurable results. The safeguarding of their rights as well as any state support is increasingly tied to result-based financing; traditional peoples are taking on the role of ecosystem service providers. This dramatic shift is regardless of the source of financing, be it from the public purse or market-based sources. However, at the

48 All facts according to: Ecosystem Market Place, State of the Voluntary Carbon Market 2013, www.forest-trends.org/documents/files/doc_3936.pdf

inception of REDD+ the outlook was clearly towards market-based financing, specifically so as to overcome the known constraints upon public funds.

Seven years after Bali the REDD+ balance sheet looks paradoxical: substantial amounts of public funds are being devoted to exporting a market-compatible mechanism to the furthest reaches of the tropical forests. Perhaps it will prove to be the largest-scale top-down approach in the history of international environmental financing. And yet despite this input, the position in 2013 is so critical that Conservation International (CI) issues a dramatic appeal to the public: «REDD+ Market: Sending out an SOS». Although the volume of tradable REDD+ credits remains slim, there is an enormous supply overhang – not enough buyers can be found. In the year 2012, therefore, the price of REDD+ credits fell from 12 to 6-7 US dollars. «If the price for REDD+ credits declines we have to cut back our programs. The reality of this will mean a reduction in the level of benefits that communities get», reports CI, quoting Christian Dannecker of South Pole Carbon Asset.

And this delineates one of the dilemmas of REDD+ financing: the «benefits that communities get» depend on a market and its volatile prices. CI may be overstating the case somewhat for propaganda purposes but it is precisely this path-dependency that REDD+ produces. The hope of generating additional and immense resources via the CO_2 market gives way to the nightmare of dependency on these markets. What does CI propose as a way out? The buying-up of REDD+ credits by donor countries. Public funds are used to institute a market-compatible mechanism, which produces credits for which no demand exists, and then the public purse is called upon to buy them up. Naturally all this is only meant to be start-up financing; at some point, stable demand is supposed to set in. «Once you have that, everything else falls into place», claims J. Ebeling, manager of BioCarbon Group. But almost ten years after the Stern Report, which so clearly pointed out the economic consequences of taking no action, it is not unreasonable to ask why, then, at the bargain price of 4-6 US dollars buyers are not queuing up to offset their emissions.

Source: Christiam Erick Nuñez Piña – Wikimedia

The showcase REDD project: Alto Mayo in Peru

REDD in situ: Alto Mayo in Peru

In the Alto Mayo protected areas in Peru, Conservation International (CI) is carrying out one of the largest voluntary REDD+ projects, financed primarily by Walt Disney. The project is well suited to characterizing some of the fundamental problems of REDD+.

REDD, by its underlying logic, is bound to the reduction of deforestation. This poses a difficulty for the financing of this task. Alto Mayo is a region affected by very little deforestation: in the year 1966 its forest area amounted to 488,000 ha, of which 474,000 ha remained in 2006. No dramatic loss, although loss has been accelerating slightly since 2001. In 1996 the annual rate of loss was 0.12%, subsequently climbing to 0.36%. This can, of course, be seen as a tripling of the deforestation rate; projected into the future, this rapidly results in a deforestation rate of 1% per year, which can now be reduced. The detail of this is complex but it is undeniable that the reduction of deforestation relates not to current deforestation but to some *future, assumed rise in deforestation.* Even if deforestation rises, then, credits can still be generated provided that the rise is less steep than has been assumed.

According to CI's description of the project, the most important cause of deforestation is the conversion of forest into coffee plantations by smallholders and settlers – an ideal target group for REDD+. It aims to support them in applying agroforestry practices which do less damage to the forest. Certainly a praiseworthy undertaking if CI's facts can be relied upon. But the small farmers will not just produce coffee: «So far, the project has generated 3 million tons of emissions reductions, which is the equivalent of taking 500,000 cars off the roads for one year, according to Espinel. Disney's contribution resulted in a 400,000 ton reduction of carbon emissions helping to shrink the giant companies' ecological footprint.»

So now, 500,000 cars can continue to be driven with a completely clear conscience; «off the roads» they are not, quite the opposite. And Disney can carry on building its luxury resort.

The quote, incidentally, is taken from the article «Disney helps dreams come true in Peru's Alto Mayo Forest» by Ramiro Escobar. The article sets out the view of the project operators concisely and provides links to further information. For the critical perspective, Chris Lang has compiled a survey in REDD Monitor: www.redd-monitor.org/2013/04/26/disneys-commitment-to-mickey-mouse-redd-conservation-internationals-trick-baseline-for-the-alto-mayo-project-in-peru

Biodiversity markets

Biodiversity markets are somewhat less exposed to public attention than CO_2 markets, although they are well established and turn over considerable sums. As a rule these are markets based on biodiversity offsets. The definition of biodiversity offsets that is usually quoted comes from the Business and Biodiversity Offset Program, according to which they are measurable compensation payments for damage to biodiversity by projects after other steps (e.g. prevention, mitigation) have been taken. The aim of environmental offsets is «no net loss» or, if possible, «net gain». «No net loss» has come to be a widely used concept in development measures.

Essentially it involves compensating for damage to nature, a longstanding and familiar approach in nature conservation, which is regulated in Germany specifically by the impact mitigation provisions of the Federal Nature Conservation Act. Mitigation payments are certainly a necessary component of nature conservation strategies and can often lead to worthwhile measures; for instance, if trees are felled for the extension of a bus lane and the same number of trees («no net loss») are replanted, or even a greater number («net gain»). Admittedly this brings a series of problems of detail in its wake – need it be exactly the same tree species? Is a tree in the green suburbs really the same as a tree in the city centre? But these can normally be resolved. Compensation can also be effected by means of remediation; in other words, by restoring a degraded landscape.

No Net Loss – a new magic formula?

«No Net Loss» is a corner stone of the European Biodiversity Strategy and an idea that is spreading to various fields. «No Net Loss» and similar strategies are linked to offset practices. Until 2015 the EU will elaborate a «No Net Loss Initiative» aiming to include the objectives of the strategy into politics.[49]

A good overview of the debate on biodiversity offsetting and the «No Net Loss» idea can be found in a FERN Briefing[50]: «Few nature lovers would argue with the idea of ‹no net loss› of biodiversity. After all, the phrase implies that the natural world will be conserved. While biodiversity offsetting – seen as a key instrument in ensuring ‹no net loss› – might mean ecosystems are lost in one area, they will be restored or conserved in another and the balance of nature will be maintained. What could be wrong with that? If only life was that simple. No net loss and biodiversity offsetting might sound like worthy concepts, but in reality they are hollow, simplistic slogans which seriously underplay the variety and richness of the natural world. The fact is that biodiversity and ecosystems

49 Biodiversity offsetting has been criticized by many civil society groups and a petition against it has been signed by more than 160 NGOs so far, including the Heinrich Böll Foundation: http://no-biodiversity-offsets.makenoise.org

50 www.fern.org/sites/fern.org/files/Biodiversity2_EN.pdf

are complex. Their lifecycles are dynamic, constantly changing and full of hierarchies and levels of organisation that are extraordinarily difficult to quantify, let alone to put a price on. It is impossible to reduce biodiversity and its multiple components into a system of credits or currencies as envisaged in the offsetting system. Nor can individual parts of nature be readily interchanged. For example, a developer might wish to trade credits or offset the destruction of a wetland area full of aquatic flora and fauna with a forested stretch of land containing important tree species. These diverse elements cannot be balanced against each other, swapped and interchanged. Regulating environmental protection – through price driven, market based instruments such as biodiversity offsetting – will signal the start of a paradigm shift way from enforceable environmental legislation.»[51]

Direct compensation measures such as these might turn into a market-based instrument if the project operators were no longer obliged to implement compensation measures but could purchase a tradable certificate giving them the «right» to destroy biodiversity. In fact not all biodiversity offsets are market-based, but the general thrust of the language and the idea of offsetting is in the direction of market-based mechanisms. The classic case of offsetting through tradable certificates is Wetland Banking in the USA, but BioBanking in Australia is also associated with a market for biodiversity credits. More recently, efforts to introduce a system for biodiversity offsets in Great Britain has prompted attention and debate.

Biodiversity markets throw out the same fundamental questions that we have already come across in other chapters. The keyword in the definition is «measurable». To facilitate mitigation in the form of offsetting through tradable certificates, the loss of biodiversity must be quantified. Despite much doubt as to whether biodiversity can be meaningfully quantified, ecologists and economists are working on it and are using the results. Yet after many years of research and practice, no consensus on methods has emerged. In a survey of the status of biodiversity offsets, the authors sum this up: «There exists no single metric that objectively captures the full extent of biodiversity, which itself has no universal unambiguous definition. Any measure of biodiversity is therefore a proxy […] However, offsets ostensibly rely upon the accurate quantification of losses and gains, and therefore require robust metrics.»[52]

The central problem of the quantifiability of biodiversity is not intractable if quantification is focused on particular aspects of particular services of nature (e.g. drinking water purification). Often, therefore, it is unclear whether compensation relates to the loss of biodiversity or the loss of ecosystem functions or ecosystem services. The inadequate state of research on biodiversity is another impediment to any meaningful quantification. The dilemma is, though, that fundamental concerns or constraints of that nature are no obstacle to the quantification necessary

51 This text and more information: www.fern.org/biodiversity-offsetting
52 Bull/Suttle et al. 2013.

Illegal logging in Brazil

in offset programmes. It is simply conceded that these are proxy methods which are under continuous improvement. But that does not eliminate the fundamental dilemma: Quantification only works by reducing complexity. Quantified biodiversity (or nature) is therefore something specific, produced by means of quantification. It is not a proxy, it is something different. M. Robertson impressively described this production of quantifiable nature on the basis of experience in the field. The result, according to Robertson, is: «The Nature that Capital can see».[53]

A look at the practical outcomes of a few years of biodiversity offsetting is equally sobering. Only 30% of projects in the US Wetland Banking context have achieved all the project objectives. In not one of the 40 Californian projects studied did the created wetland areas function satisfactorily. And another problem should not be overlooked: in many offset programmes, well maintained ecosystems can now become barter goods. In this way, voluntarily protected land areas are turned into «credits», an exchangeable commodity.[54]

The reality is that offsets couple the conservation of nature to its destruction. The only demand for credits is from those who have to buy them in order to mitigate destruction. If this becomes an important element in environmental conservation, a fatal dependency arises: in that event, nature conservation is increasingly financed

53 Robertson 2006.

54 «If changes to offset mean that voluntary restauration activities are now considered to have generated saleable biodiversity credits, this is likely to present a difficult-to-resist temptation: to take the opportunity to sell the credits generated, despite the fact that such credits can then be used to trade biodiversity destruction elsewhere.» Maron et al. 2012.

by the (mitigation of) destruction. For this reason, environmental groups in Great Britain have criticized the biodiversity offsetting policy as a «license to trash».[55]

Biodiversity markets are a reality, but are also constrained, like most PES systems, by the serious and indisputable difficulties in quantifying ecosystems and converting them into tradable assets. A very different situation pertains to REDD+ and related mechanisms based on the reduction or mitigation of CO_2 emissions. Despite a number of methodological difficulties, these are comparatively easy to measure. Therefore high hopes are vested in CO_2. It could become a kind of currency in the new economy of nature. This is constantly emphasized, at least by a few important promoters of international CO_2 regulation, foremost among them Rachel Kyte, Vice President of the World Bank. «Getting the prices right» via «putting a price on CO_2» is the tireless refrain, repeated also by IMF boss Christine Lagarde in a debate on «The Economic Case for Climate Action» with Jim Yong Kim, President of the World Bank. Two issues are pivotal: setting CO_2 prices correctly and scaling down subsidies that harm the climate. In the same debate, Kyte dreamed of a world in which «CO_2 is the currency of the 21st century.»[56]

In the meantime, the hopeful yearning for the «right» prices has almost taken on the form of a quasi-religious belief that can no longer be shaken by petty facts. For the bottom line results of most recent attempts to steer everything by means of the «right» prices give cause for concern, to say the least: nowhere has «the market» brought forth the «right» price signals. The most important CO_2 market, the European emissions trading scheme, has failed in precisely this respect. Opinions may differ over the reasons for that, and see a correction of the CO_2 market as a way out – but up to now, at least, it has not been a success story: hoping to correct a market failure by means of a market mechanism, which in turn fails to supply the right price signals. Both the European emissions market and REDD+ as well as other attempts to establish emissions markets (aviation, Alpine transit exchange) show that such markets are highly challenging to set up: if the market mechanism is capped, its introduction is met with strong political resistance. Over and over again, the win-win world in which economics and ecology are unified is proved to be an illusion.

55 www.theguardian.com/environment/2013/sep/05/biodiversity-offsetting-proposals-licence-to-trash. The article provides a brief overview of the current debate on biodiversity offsets in Great Britain.

56 The debate is documented in extracts in the REDD+ Monitor: www.redd-monitor.org/2013/10/11/climate-change-at-the-world-bank-you-can-imagine-a-future-world-where-carbon-is-really-the-currency-of-the-21st-century. Rachel Kyte's comments are really remarkable: «But I think we want to work together with the Fund not just on the case for carbon taxes, but also for those countries that are pursuing market based mechanisms, to show that you can imagine a future world where carbon is really the currency of the 21st century and that we can manage carbon as a currency and start thinking about carbon as a tradable asset, not in the way that we think about it now with the European price so low and everybody spooked, but really imagine that this is a currency that has to be managed and there is creativity around that.»

The Bolsa Verde in Brazil

The passing of a new Forest Law in 2012 prompted widespread debate in Brazil. Strict environmental standards were made more flexible. One of the innovations was the introduction of tradable titles for protected land areas (CRAFs, Cotas de Reserva Ambiental Futuras). This means that landowners who have not fulfilled environmental conditions (only 20% deforestation on private estates in the Amazon region) can buy certificates from other property owners who have conserved more than legally required. Environmental quotas are being turned into a tradable good; and a penalty is becoming a market instrument.

3.5 A new system of national accounts

For most observers and participants the Rio+20 Summit was a disappointment. Not so for Rachel Kyte who, with some others, sees a major international, even epochal, breakthrough in the launching of the Natural Capital Declaration during the Rio Conference: «There is now overwhelming support for implementation across the world. Let's look back in 20 years from now and remember that this was the time when we changed the way we accounted for nature».[57]

The Natural Capital Declaration brings together financial institutions (banks), corporations and governments in order to disseminate and pilot new methods for including recognition of natural capital in corporate and governmental accounting. It has taken the interminable and frustratingly futile debate about «alternatives to GDP» in a new direction: the inclusion of natural capital should be the new basis for sustainable development and growth. As is so often the case, it is a mélange of constructive and problematic aspects.

Of course, criticism of the narrowness of gross domestic product (GDP) as an economic indicator is valid and virtually banal in the meantime, and the approach of motivating corporations to be more accountable for their environmental damage is interesting and important. But it is an approach built on dubious foundations, and here once again we encounter well-known themes and problems of the new economy of nature.

«So, GDP can give misleading signals about the economic performance and well-being of a country. As a result, ecosystems are deteriorating worldwide, and with them, the capacity to support human wellbeing and sustainable economic growth».[58]

If we take such statements seriously then an epochal revolution in environmental policy really is dawning right now. What is suggested here is that the fundamental cause of environmental destruction worldwide is that it has never been adequately

57 www.teebforbusiness.org/js/plugins/filemanager/files/NCA_Program.pdf

58 www.worldbank.org/en/topic/environment/brief/environmental-economics-natural-capital-accounting

recognized in the national accounts. Natural Capital Accounting, it is claimed, is not just one action area among others but the key to a sustainable future. As a recurring leitmotif we hear that: «We can only treasure what we measure». This is the refinement of the management principle formulated by Peter Dunker: «You can only manage what you measure». If that is true, then it is only logical that the previously inadequate approach to factoring natural capital into calculations is the root of all evil. But this has consequences which are not discussed in the propagandistic and bombastic pronouncements by the Natural Capital Declaration and the World Bank:

- Inclusion means calculation. So all the problems of principle and methodology in quantifying the value of nature resurface.
- Nature's services are related to the «capacity of supporting human well-being». This is an extremely restricted view of nature, but it is necessary in order to make accounting possible at all. A selective view of nature is being established here: the only nature that will and should be perceived is that which serves human well-being. And what if it does not?
- To define nature in this way also means to assume that we possess sufficient knowledge about how nature works, and hence we can isolate nature's services from the comprehensive functions of ecosystems.
- Ecosystem services are provided both by nature without human intervention (CO_2 storage by natural forests) and by anthropogenically produced nature (CO_2 storage by agriculture). Natural capital accounting that is based on quantifying ecosystem services cannot (and is unwilling to) distinguish between the two. Nature as a basis or input and as a product become one. This has far-reaching conceptual and practical consequences.
- Ecosystem services are substitutable and in competition with each other: CO_2 storage can be accomplished by natural forests, tree plantations or through renaturation of peatlands. A good arena for the economists' work is thereby established: costs can now be compared and trade-offs calculated.

A notable phenomenon is that an influential constellation of actors is emerging around the complex of Natural Capital Accounting. The process that led to the Natural Capital Declaration was initiated by UNEP FI in 2010 with the trend-setting publication *Demystifying Materiality: Hardwiring Biodiversity and Ecosystem Services into Finance*. Whereas the Natural Capital Declaration is aimed primarily at integration of the finance sector, the WAVES partnership[59] initiated by the World Bank shifts attention more towards national accounting, and hence governments. Partners in the multilateral system are, again, UNEP but also UNDP and the UN Statistical Commission. On the government side, Great Britain assumes a special role: the British government with its environmental ministry DEFRA is a pioneer in the development of a method for Natural Capital Accounting. On the civil society side, WWF, CI and TNC are among the supporters.

59 WAVES stands for Wealth Accounting and Valuation of Ecosystem Services.

WWF and TNC are promoters of the Natural Capital Project, which is working on strategies and tools for integrating natural capital into policy-making. The project is a cooperation with Stanford University, which has played an important role in the history of the new economy of nature.

The same constellation of actors tends to gather in other action areas. The World Bank with its Forest Carbon Partnership Facility and the UN with UN REDD are the key organizations developing the conceptual framework for REDD+. As donors, Norway and Germany (via KfW) are particularly significant. The «Big Three» of the NGO scene – WWF, CI and TNC – are also present in numerous national REDD+ programmes. CI cooperates with Walt Disney on the administration of two of the largest private-sector REDD+ projects in the Democratic Republic of Congo and in Peru. In addition to its commitment to numerous REDD+ projects, WWF published a «Guide to Building REDD+ Strategies» in 2013. TNC is supporting REDD+ projects in Indonesia, Bolivia and Brazil and belongs to the think tanks active in the debate about the design of REDD+. WWF, CI and TNC also reappear with the World Bank as founders of the TEEB for Business Initiative.

Numerous other supporters and promoters are found in each of these initiatives. But with cooperation from the United Nations, the World Bank, TNC, CI, WWF, the TEEB Initiative and the British government and financial support from Norway and Germany, a core group of promoters has formed that addresses various action areas for a new economy of nature both by financing projects on the ground and by refining and disseminating the conceptual framework.

No nature anywhere – remarks on the Anthropocene

Peter Kareiva is the chief scientist for The Nature Conservancy (TNC), said to be the largest environmental organization in the world. His comments are often provocative and generate considerable debate. Like many others he embraces the theory of the Anthropocene, and combines it with an unforgiving account of the strategies of the environmental movement. «But today it is impossible to find a place on Earth that is unmarked by human activity. The truth is humans have been impacting their natural environment for centuries. The wilderness so beloved by conservationists – places ‹untrammeled by man› – never existed, at least not in the last thousand years and arguably even longer.» (Kareiva et al. 2012). This, in Kareiva's words, is the Anthropocene thesis, according to which we have entered a new geological era in which man is forming nature.[60]

The wrong orientation to «wilderness», he says, has led to environmental conservation at odds with people and development. 14 million people in Africa alone are said to have been driven off their land by environmental conservation measures (e.g. the designation of parks). This critique is not new, but from the pen of a leading light of the largest NGO in the conservation camp, its vehemence is surprising. Kareiva quoted with obvious approval a declaration of indigenous peoples that environmental organizations now represent the «greatest single threat to the integrity of indigenous land».

Those are strong words – but what are their implications? That the rights of indigenous peoples should now take centre stage? Well no, not that. «Conservation's binaries – growth or nature, prosperity or biodiversity – have marginalized it [human development] in a world that will soon add at least two billion more people. In the developing world, efforts to constrain growth and protect forests from agriculture are unfair, if not unethical.»

Instead new strategies are called for: «Instead of scolding capitalism, conservationists should partner with corporations in a science-based effort to integrate the value of nature's benefits into their operations and cultures. […] A new conservation should seek to enhance those natural systems that benefit the widest number of people […] Nature could be a garden» – laid out and managed by people.

This is indeed the logical consequence of the Anthropocene thesis: if everything is already dominated by humankind anyway, then humans must take on

60 «Nature as we know it is a concept that belongs to the past. No longer a force separate from and ambivalent to human activity, nature is neither an obstacle nor a harmonious other. Humanity forms nature. Humanity and nature are one, embedded from within the recent geological record.» That is the nucleus of the Anthropocene theory, which not only hails a paradigm shift in the natural sciences but seeks new paths beyond it in culture, politics and everyday life. This is how the House of World Cultures describes its Anthropocene project: http://www.hkw.de/media/en/texte/pdf/2013_2/programm_6/anthropozaen/booklet_anthropozaen_eine_eroeffnung.pdf. All quotes by Kareiva from: Kareiva et al. 2012.

this task consciously and responsibly. The category of «protection» no longer makes sense.

Now the idea of «wilderness» has been strenuously deconstructed for some long time, and by no means did all environmental conservationists cling to the ideal of «conservationism». But out of a perfectly plausible analysis – unspoilt nature is a myth – problematic conclusions are being drawn: everything is influenced by humans – and this eradicates the distinctions between agriculture, tree plantations and natural forests. Human-designed nature and nature with very little anthropogenic influence become the same thing. From soya plantations to the Amazon rainforest as the habitat of indigenous peoples – everything is Anthropocene in this view. Likewise, everything is natural capital. From soil fertility to the retentive function of trees, everything falls into the category of natural capital. The nature that is produced by people (e.g. palm oil plantations), nature that is only used by people, and nature that is mildly or barely influenced by people – coalesce into one. Everything must be managed by the great gardener, the human being. Thus ecosystems (or natural capital) can be geared towards giving the greatest possible benefit to people. That many of the world's people regard such a radicalized anthropocentric perspective not as «science-based» but as culturally biased occidental thinking, probably eludes the awareness horizon of apologists for the natural-capital or Anthropocene theories.

4 Illusions, Wrong Turns and Alternatives – Concluding Remarks

The debate on the subject areas addressed in this paper is not straightforward, for on the one hand they quickly draw us into complicated technicalities of economics; on the other hand, extremely oversimplifying narratives have been constructed around all aspects of the economic valuation of nature, the appeal of which is understandable. Objections are often brushed aside as ideological stubbornness. Who on earth can still be opposed to «the» market? Debates quickly go off at a tangent and all doubts are dismissed as «ideological» or misunderstandings.

This is joined by the difficulty of mobilizing financial resources for nature conservation under today's conditions. At the moment, demanding more money for nature conservation is a political non-starter. Evidently there is no public buy-in, at this time, for increasing taxes or levies on the strength of ecological arguments. In such a setting the promise to make the conservation of nature itself a source of financing is virtually irresistible. But desperation and hope are not usually the best counsel, and should not obstruct a critical view of the practice and reality of what the economy of nature promises. The critique developed here of the new economy of nature has taken up two different but definitely connected issues. The first is on a more conceptual level: are key basic assumptions of the new economy of nature tenable, and what are their implications? Secondly, the intention is to show that certain mechanisms in the context of the new economy of nature are problematic, and trail far behind its great promises. On the conceptual level the following points of criticism are crucial:

- The new economy of nature is based on the assumption that we live in a world of rational decisions. Environmental degradation in all its forms is the consequence of poor information and the wrong price signals. With correct information and the right prices, environmental degradation and non-sustainable resource consumption could be arrested. This is a world without interests and power structures. Conflicts like mangrove conservation versus shrimp farming are dealt with by quantifying the ecosystem services and resolved with a happy ending, to cite one of the standard examples. If that works out, so much the better. Unfortunately, the world is full of examples which do not proceed according to this model. Mangroves are destroyed by urbanization and industrial plants. Almost nowhere in the world can large dams and petroleum drilling be prevented by quantifying ecosystem services.

- The economic view of nature radically alters nature itself. In order to be able to quantify nature economically, we need a nature that can be captured in economic terms. Nature becomes primarily the provider of services, which are quantifiable. Such an image of nature is brought into the political mainstream by countless publications and brochures, often with good intentions to frame the concerns of ecology in a modern language. Despite any amount of mutual reassurance in the prefaces of publications – monetarization is the economists' prime work arena, even when it comes to nature. Countless studies calculate external costs, opportunity costs, costs of avoidance etc. Practically all damage can then be expressed as a monetary value («external costs»). But what does it mean to express the damages of road noise and lignite in euros and cents?
- All these calculations are informed by normative decisions. Questions that citizens should communicate about – for example: how much road noise do we want to put up with? – become sums that conceal these normative decisions. Instead of reaching political agreement on preferences and priorities, this is delegated to the calculations of economists. Economic studies that express their findings in figures project an aura of objectivity that is just an illusion. Indeed, the economic view is often justified by the fact that, unlike the subjective appreciation of nature, it delivers objective results. Anyone who accepts this is surrendering to the economists' calculations and consenting to the devaluation of normatively justified decisions. Decisions about the future also inform the calculations: assumptions about the frequency of serious accidents in nuclear power plants alter the calculations dramatically, as does the assumption that the next hundred-year flood is really only likely to happen one hundred years from now. The difficulties of capturing or quantifying the complexity of nature are obvious and undeniable. Individual «services» of nature (pollination, CO_2 storage), in contrast, are relatively easy to quantify. This is why calculations about nature focus on its calculable «services» first and foremost.
- Expressing nature in terms of monetary values prompts a spontaneous sense of unease. Stating the economic value of a bird seems absurd to most people (if they are not economists). But normally economists are doing something else: they are calculating the economic value of the service (pest control) that this bird provides. Therefore a common criticism of the monetarization of nature, namely that it is impossible and perverse, is in danger of missing its mark. The economists can monetarize nature's services – and do so over and again. They gladly admit that many calculations can only arrive at approximate values, but this is still better, they say, than setting the value to 0, which would happen in the absence of calculation. Economists are used to making assumptions as a basis for calculations. Therefore it is worthwhile casting an eye over the results of calculations previously carried out: For instance, would internalizing the external costs of car traffic or of lignite combustion produce the «right» price signals or simply impose a small additional burden on car drivers? Moreover, the promised innovative financing mechanisms have not so far yielded the eagerly anticipated source of funding for environmental policy. Their implementation is proving be

complicated or politically impracticable. Often the only flows of significance are public funding streams.

In 2006, many also celebrated the Stern Report as a ground-breaking event. Finally, a recognized economist had stated that the costs of failing to act on climate change were higher than those of taking action. The mitigation of climate change was justified as economically rational. But eight years after the publication of the Stern Report, this insight cannot be celebrated time and time again; rather, it has to be asked why the great revelation of economic rationality has had so little effect. All the major economic and political actors are responding as if they wanted to achieve a 4° target rather than prevent global warming. The economic assessment of climate change goes ahead as if there were no national states struggling for international competitiveness and (purportedly) needing this for political stability.

The dilemma in most cases is quite clear: we do not lack the information to behave in the (environmentally) right way, but the capacity to follow through on it politically. Although countless studies highlight the environmental and economic consequences of road traffic, sufficient political buy-in cannot be garnered even to abolish company car privileges or introduce a general speed limit. An eco-tax on factory farming or unhealthy foods? No, it is not the information we lack but the political majorities. This dilemma cannot be escaped by resorting to some putative economic rationality.

In global environmental policy, yet another paradox must be borne in mind. The crosshairs of innovative financing mechanisms (REDD+ and PES) are very much trained on tropical forests and other ecosystems. Many of these are habitats of indigenous peoples and local communities whose patterns of use have conserved the ecosystems relatively well, for the most part. So instead of protecting and fostering their rights and ways of life, financial support is coupled to the provision of services. It makes no sense to justify this by claiming that valorization of ecosystem services is necessary to protect endangered ecosystems, however, because in fact they are often very well preserved. Thus, the innovative financing instruments become a means of pushing through new forms of valorization. Here a dangerous path is being carved out: the priority is no longer safeguarding of rights but rewarding performance. The future prospects for indigenous peoples and local communities are being made dependent upon the provision of concrete services.

Many of the new financing instruments are based on the logic of «offsets». Indeed, it is easy to envisage how money for environmental measures can be generated by means of offsets. However, the logic of offsetting links the creation of the «good» to the continuation of the «evil». This establishes a dangerous and ethically troubling dependency. Money for peatlands is shackled to the continuing use of company cars on the roads. Compensation payments have been and will remain an important component of environmental policy. But they cannot become a general mechanism upon which environmental policy increasingly comes to depend.

One thing we can learn from the new economy of nature is the importance of narratives. It is astonishing how quickly the language and concepts referring to all aspects of nature have changed. The triumphant rise of the «ecosystem services»

paradigm is an impressive example of this. The word conveys and «normalizes» a particular view of nature. However, this turn of phrase increasingly separates ecology and nature conservation from everyday language; it is turning into jargon. In the year 2010, TNC commissioned a survey to ascertain the popularity and acceptance of concepts and terms used in nature conservation. «Ecosystem services» and «natural capital» landed right at the bottom of the scale; the respondents did not like these concepts. The phrase they liked best was «nature's value».[61]

Referring to nature using economic categories is unlikely to be any more popular in Germany, where «human capital» has already had its moment of fame as «ugliest word of the year».

If political support is key to the future of environmental conservation, then it could be risky to place too much reliance on economic narratives. Moreover, this language tends to divide opinions rather than enabling a consensus on the importance of conservation and benign use of nature.

The economization of the language of nature squeezes out or marginalizes ethical and moral justifications for the conservation of nature. What many perceive as progress and a «modern» and consensus-oriented justification of environmental policy is, in fact, troubling. For many of our decisions are not based on an economic calculus but on value orientations. By no means do we leave everything to the economic calculus and the markets. Our society prohibits child pornography or the sale of votes at election time. It does not apply market mechanisms to the adoption of children or the availability of kidneys. What the market should regulate and what it should not, is a matter on which society must form a will of its own.

The philosopher Michael Sandel wrote a powerful book on this, entitled What Money Can't Buy. Importantly, he argues that markets which exchange and value goods also alter them. Whether pollution is a crime or a purchasable and tradable permit makes a difference. Sandel bemoans the vacuous public discourse that is increasingly determined by pure market ideology. Such an ethical and normative void also characterizes the new economy of nature.

Any criticism of the new, innovative financing mechanisms is countered with the menacing question as to the alternatives. It should not be forgotten, however, that innovative mechanisms like emissions trading were enforced by discrediting possible alternatives: tax rises are not possible, it was said, so emissions trading is the only option for putting a price on CO_2. Now we find ourselves with a CO_2 price that makes the use of lignite economic. In the southern hemisphere, REDD+ is supposedly building on the failure of classic nature conservation. But is this an accurate analysis?

61 The results of the study can be consulted here: www.conservationgateway.org/Files/Pages/ key-findings-recent-natio.aspx. A study by Resource Media makes recommendations, building on the TNC survey, as follows: «Services offends our expansive sense of the incalculable and intangible benefits nature provides. The TNC research indicates that voters are sceptical of equating benefits to specific dollar amounts and less persuaded by dollars-and-cents messages. References to the amount of clean air and water provided, or the number of people who benefit, are far more persuasive.» (www.carangeland.org/images/Ecosystem_Services_Messaging_Needs_Assessment_072512.pdf)

Given the miserable bottom line of all the innovative mechanisms, this should be revisited with fresh eyes; at the same time, concepts dismissed as outmoded, like ecological tax reform – which need not mean tax rises – might merit another chance in political discourse.

Consistently bound up with the rhetoric of the new economy of nature is the farewell to regulatory policy. This, too, should not be accepted uncritically. Regulations and prohibitions have always provoked resistance but have also proved highly effective. From the introduction of mandatory seat belts and catalytic converters to the prohibition of asbestos – regulatory policy can look back at a history of acceptance and success. However, without political majorities, heavier taxation of the emissions of traffic or industry is barely capable of attracting political buy-in. This is the crux – and not any presumed ineffectiveness of regulatory policy measures.

The problem is not the lack of alternatives but their lack of political practicability. This dilemma cannot be resolved by resorting to economic rationality, only by battling for political majorities. It has been known to work occasionally, as recent German history has shown with the rise of the anti-nuclear-power movement. But that is a whole different chapter. For no quarter is given, within the economic view of nature, to social movements and their scope for exerting influence.

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ABBREVIATIONS

BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit (German Federal Ministry for Economic Cooperation and Development)
FAO	Food and Agriculture Organization (UN)
CBD	Convention on Biolological Diversity (adopted in 1992)
CI	Conservation International
COP	Conference of the Parties
DEFRA	Department for Environment, Food and Rural Affairs (GB)
GDP	Gross Domestic Product
GIZ	Gesellschaft für internationale Zusammenarbeit (German international cooperation agency)
IFM	Innovative Financial Mechanism
IPCC	Intergovernmental Panel on Climate Change
IMF	International Monetary Fund
KfW	Kreditanstalt für Wiederaufbau (German state development bank)
NGO	Non-governmental organization
MBI	Market-Based Instrument
MA	Millenium Ecosystem Assessment
MRV	Measurement, Reporting and Verification
PES	Payment for Ecosystem Services
REDD	Reducing Emissions from Deforestation and Forest Degradation (REDD+ also includes forest conservation)
SCC	Social Cost of Carbon (SCC)
TEEB	The Economics of Ecosystems and Biodiversity
TNC	The Nature Conservancy
UBA	Umweltbundesamt (German Federal Environment Agency)
UfZ	Helmholtz Centre for Environmental Research
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNEP FI	United Nations Environment Programme Finance Initative
UNDP	United Nations Development Programme
VCS	Voluntary Carbon Standard
VCU	Verified Carbon Unit
WAVES	Wealth Accounting and Valuation of Ecosystem Services
WBGU	Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (German Advisory Council on Global Change)
WWF	World Wide Fund for Nature

From climate change to ecosystem degradation – the solution to these problems could reside in an economic «valuation» of nature and its services. But if the existential benefits that nature provides to humankind are expressed in terms of euros and dollars, can that really give nature any better protection?

The publication «New Economy of Nature» by Thomas Fatheuer provides a readily understandable introduction to the subject and illuminates the concepts and instruments that follow from the idea of monetarizing nature. Accessible examples show the social and ecological goal conflicts and the powerful but risk-laden influence of this New Economy.

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