



Analysis

Beyond “benefits”? Looking at ecosystem services through the capability approach

Yuliana Polishchuk*, Felix Rauschmayer

Helmholtz Centre for Environmental Research (UFZ), Permoserstr. 15, 04318 Leipzig, Germany

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ABSTRACT

Current conceptual debates on the impacts of ecosystem services (ESS) on human well-being often boil down to discussing the application and limitations of monetisation approaches. Meanwhile we argue that ESS can be understood in a richer and more nuanced way if we revisit the human well-being dimension of the ESS concept, going beyond the widely cited notion of “benefits” as put forward by the Millennium Ecosystem Assessment (MA, 2005) and transcending the currently prevalent utilitarian framing. Hence, we examine ESS through the lens of the capability approach, which offers a multidimensional framework for human well-being as an alternative to mainstream utilitarian and opulence perspectives. Within this framework, ESS can be effectively viewed as contributing – in a diversity of ways – to people's capabilities, i.e., their freedoms to lead lives they have reason to value. Such a view opens up a richer debate on the human dimension of ESS and points to new potential areas and ways of application of the ESS concept.

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1. Introduction

One of the trends in the recent ecological economics literature has been the growing attention to the concept of ecosystem services (ESS), commonly understood as the benefits people obtain from ecosystems (MA, 2005). While initially the ESS concept was introduced in the early 1980-s with the “pedagogic” purpose of elucidating human dependence on functioning ecosystems to non-ecologists (Gomez-Baggethun et al., 2010), it soon became broadly associated with monetary valuation and increasingly popular “payments-for-ecosystem-services” (PES) schemes (Engel et al., 2008; Wunder et al., 2008). In a significant part of the recent debates, however, the appropriateness of the ESS concept as a tool for nature conservation has been contested (McCauley, 2006; Spash, 2008). Academic contributions here essentially focus either on fundamental issues, such as intrinsic vs. instrumental values of nature (e.g., Armsworth et al., 2007; see also Minter and Miller, 2011), or on strategic issues of including the value of nature in decision-making, in the light of apparent preference given to monetising approaches in political debates and the related advantages (Ring et al., 2010) and/or drawbacks (McCauley, 2006). Statements examining the ways in which monetising approaches could be employed to incorporate the value of nature into societal decision-making processes but also addressing non-monetary values, such as those developed in the theoretical foundations of *The Economics of Ecosystems and Biodiversity* – TEEB (TEEB, 2010a) – often remain neglected in the public debate in favour of more clear-cut positions pro and contra monetisation (McCauley, 2006; Sagoff, 2011).

Meanwhile discussions on the clearly anthropocentric concept of ESS have lacked a thorough elaboration exactly with regard to its anthropocentricity: namely, in what ways ecosystems' contribution to people's well-being can be perceived, how human well-being is conceptualised, and to what extent the widespread notion of “benefits” is in fact appropriate when referring to the positive effects of ecosystems on human beings. In this light, the main motivation behind the present paper is in line with Norgaard's (2010) and Norton and Noonan's (2007) call for developing a richer perspective on societal relationships with nature. In the following, we will introduce a multidimensional perspective for analysing effects of ecosystems on human well-being grounded in the capability approach (CA), which has been addressing human well-being both on theoretical and practical grounds for some decades now.

The CA, in contrast to the more mainstream utilitarian and opulence-based approaches, views human well-being in terms of people's [1] freedoms to lead a life they have reason to value (*capabilities*) and [2] actual achievements (*achieved functionings*¹). As both the CA and the ESS concept are multidimensional and centred on human well-being, the capabilities lens offers a particularly useful perspective for analysing the well-being dimension of ESS. We believe that this perspective opens up a richer debate on the human dimension of the ESS concept and points to new potential areas for the application of the concept.

The rest of this paper is structured in the following way. In the second section, we will revisit the human well-being dimension of ESS, turning to some conceptual aspects of the notion of ESS and critically reviewing the links between ESS and well-being as proposed by the *Millennium Ecosystem Assessment* (MA, 2005). In the third section, we will introduce the CA as an alternative theoretical framework for

* Corresponding author. Tel.: +49 341 235 1681; fax: +49 341 235 1836.
 E-mail addresses: yuliana.polishchuk@ufz.de (Y. Polishchuk),
felix.rauschmayer@ufz.de (F. Rauschmayer).

¹ For terminological details, see e.g. Nussbaum, 2000; Robeyns, 2005; Sen, 1999.

analysing human well-being and propose a way of examining the ESS concept through a CA lens. Finally, we will draw some implications of the proposed perspective for the current debates on ESS.

2. Revisiting the Human Well-Being Dimension of Ecosystem Services: Theoretical Background

2.1. The ESS Concept and Current Debates around It

The concept of ESS, coined in the 1980s in the writings of Ehrlich and Ehrlich (1981) and Ehrlich and Mooney (1983), was designed as a way of demonstrating how biodiversity loss affects ecosystem functions and ultimately human well-being (Gomez-Baggethun et al., 2010). Since the late 1990s, the notion of ESS has been increasingly employed by academics, researchers, and policy-makers, particularly with the vital contributions by Costanza et al. (1997) and Daily (1997). The publication of the *Millennium Ecosystem Assessment* (MA), a major global study on ecosystems carried out through 2001–2005, “finally brought the concept broadly into public policy” (Jax, 2010: 66), having illustrated the multifaceted benefits that humanity obtains from ecosystems all over the world and thereby emphasised the dependence of human beings on functioning ecosystems.

A broad range of definitions and classifications of ESS have been developed in a variety of academic and policy contexts, all of them pointing to the positive contribution of ESS to human well-being.² However, the various definitions diverge with regard to how they address such issues as the concept's universality vs. its context dependence, double counting (especially relevant for supporting and regulating ESS), relationships between the categories of services and ecological processes and functions, etc. (e.g., Farley and Costanza, 2010; Jax, 2010; TEEB, 2010a). A variety of ESS definitions and some conceptual limits have been scrutinised and summarised, among others by Lamarque et al. (2011), who attempt to locate ESS within the broader framework of nature's contributions to human well-being. These authors clarify, for instance, the notions of ecological, environmental, landscape, and ecosystem services and shed light on the often unclear (at least for non-ecologists) boundaries between the concepts.³ Whereas the political significance of these differentiations might not be evident at first sight, they become important, e.g., when it comes to the use of the ESS concept for the politically relevant goal of biodiversity conservation.

On the whole, one could arguably distinguish between two major variations of ESS definitions: one focussing on the ecological dimension and the other one describing ESS as an economic category (Jax, 2010). Daily (1997: 3), for example, provides an early definition of ESS that is based on ecological characteristics. According to it, ESS can be understood as “the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life”. Here, ESS embrace the categories of 1) ecosystem goods, such as timber, biomass fuel, forage, pharmaceuticals, etc., 2) ecosystem functions, for instance, water purification, flood mitigation, (partial) climate stabilisation, pollination and many others, and 3) aesthetic and cultural benefits (ibid: 3–4).

² In this paper, we will focus on the “positive” services and will not address the negative impacts of ecosystems in the form of “disservices” such as diseases spread by wetland mosquitoes, wetland odours, etc.

³ Often these terms are used interchangeably (see e.g. de Groot et al., 2010; Lamarque et al., 2011); however, Lamarque et al. (2011) show how these can also be applied to refer to different categories. Thus, the term “ecological services” might imply services provided by a certain species or group of species rather than an ecosystem on the whole (Lamarque et al., 2011). Environmental services, in turn, sometimes imply “human-made services, which totally or partially substitute ecosystem services” (e.g. water and waste management services; ibid: 2). Primarily, however, the notions of environmental and ecosystem services are used interchangeably, especially with reference to PES schemes. Landscape services, finally, in some cases refer to those stemming from a certain landscape, region, or a land-use system rather than from an ecosystem (ibid.).

An “economic,” or benefit-based, definition of ESS is proposed by the MA (2005: 26), where ESS are understood as “the benefits people obtain from ecosystems” and classified into the categories of provisioning, regulating, cultural and supporting services. This famous classification, complemented by linkages to various elements of well-being, is presented in Fig. 1.

In the MA classification, provisioning services are the material benefits derived from ecosystems, such as fresh water, raw materials, food (which can be further split up into a number of more specific sub-categories like agricultural crops, game, fish, etc.), as well as genetic, medicinal, and ornamental resources. Regulating services, as the name suggests, regulate processes important for human functioning and flourishing and embrace air quality regulation, erosion prevention, climate regulation, (natural) flood mitigation, moderation of extreme events, etc. Cultural services refer to recreation, spiritual and religious values, educational information and other intangible ecosystem contributions of this kind. Finally, supporting services secure and maintain the production of other ESS and include primary production, nutrient cycling, photosynthesis, etc. Because we focus on the human well-being dimension of ESS and because the MA definition has been so widely accepted in the relevant literature, we will further deal with this definition.

In the MA classification, the first three groups of ESS – provisioning, regulating, and cultural – refer to *direct* contributions of ecosystems to human well-being. Meanwhile supporting services secure provisioning of the other three ESS groups, thus referring to deeper ecological processes and representing *indirect* contributions. Avoiding possible conceptual discrepancy, TEEB, for example, omits the category of supporting ESS and adopts the category of habitat provisioning instead. Not entering these debates, we intentionally limit the scope of our argument to the three “consensual” groups of ESS – provisioning, regulating, and cultural services – due to the specific focus on the effects of ecosystems on human well-being. By no means do we herewith wish to downplay the importance of supporting ESS for safeguarding human well-being. Their contribution is essential at the *fundamental* level, however; hence, it is indirect and more difficult to link to human well-being than the other ESS categories are.

Turning from conceptual foundations to practical applications of the ESS concept, the increasingly popular PES schemes have arguably gained primacy in policy-making (Daily et al., 2009; Kinzig et al., 2011; for a comparison of PES schemes in developing and developed countries, see Wunder et al., 2008). Beyond that, valuation studies like TEEB, illuminating the value of nature by identifying both monetary and non-monetary values of ESS, are meant to inform policy-makers and other stakeholders at various governance levels world-wide (e.g., TEEB, 2010b). When it comes to using the ESS concept for biodiversity conservation, valuation approaches are usually targeted at demonstrating economic rationality behind biodiversity conservation since biodiversity strengthens ecosystems and thereby supports ESS provisioning (although the linkages can be highly complex). At the same time, biodiversity is also considered to be of high intrinsic value (CBD, 1992; MA, 2005). However, as already indicated above, the “appropriateness” of the ESS concept for the goal of biodiversity conservation has become subject to scrupulous attention and often heavy critique (see, for example, McCauley, 2006; Norgaard, 2010). One crucial argument coming from an ecological perspective is that there is much more to biodiversity than solely ESS (e.g., Jax, 2010); moreover, a mere emphasis on safeguarding ESS might lead to detrimental outcomes for biodiversity, e.g., in cases where exotic species offer the same or even higher levels of ESS provisioning compared to native species (Redford and Adams, 2009). From an ecological economics perspective, “commodification” of nature through putting “price tags” on ESS represents another frequent point of critique (e.g., Gomez-Baggethun and Ruiz-Perez, 2011).

In the light of these debates, we argue that a richer perspective on ecosystem contribution to human well-being has to be developed, which will help to place the discussions on ESS in a wider context

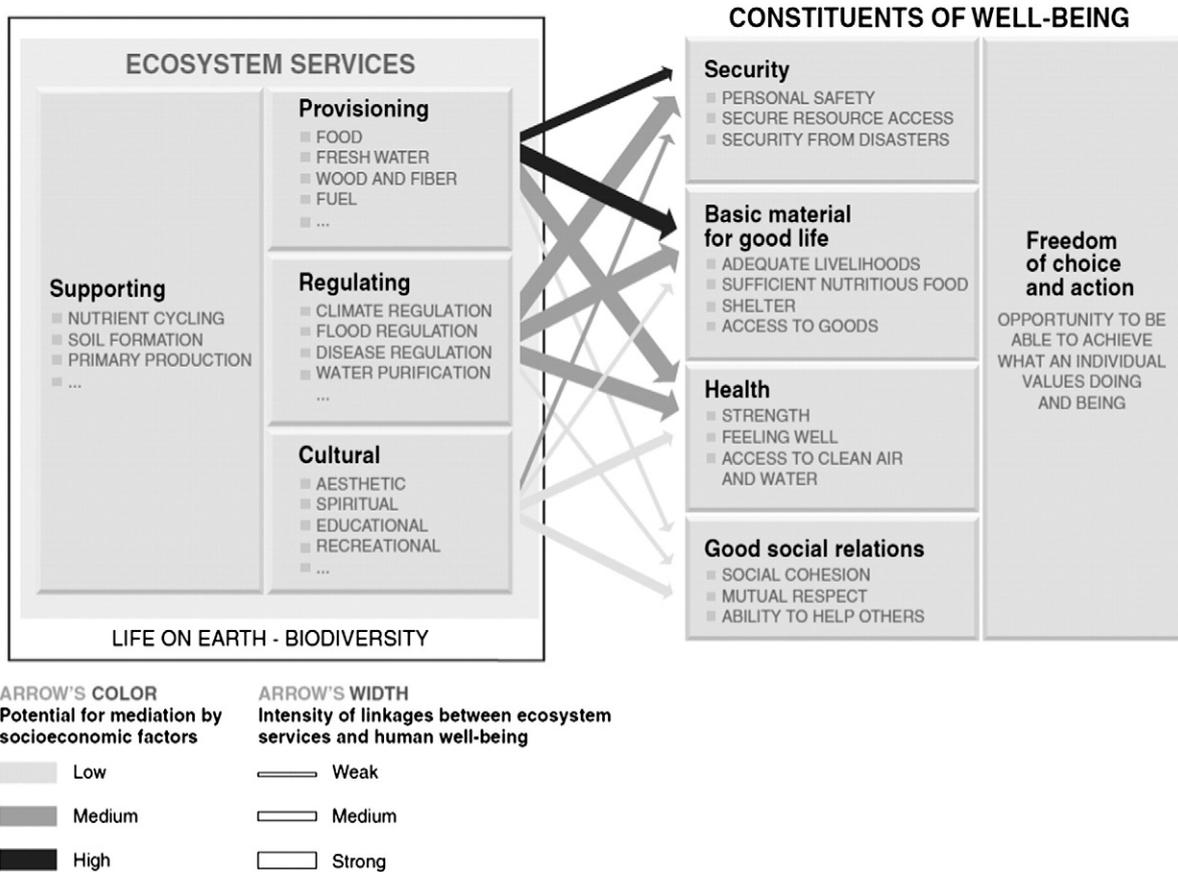


Fig. 1. Linkages between ecosystem services and human well-being. Source: MA, 2005: 28.

beyond monetisation. As a first step, we propose to revisit the human well-being dimension of the ESS concept, applying a multidimensional framework of human well-being to reflect the multidimensional character of the ESS concept. One example going in this direction can be found in Duraiappah's (2004) United Nations Environment Programme (UNEP) report on human well-being and ESS. Duraiappah (2004) uses the ESS concept as a link between human well-being (and more specifically poverty) and ecosystems and shows how ESS influence the different well-being components. Such an approach vividly demonstrates the diversity of ecosystems' contributions to well-being, as well as the particular dependence of the poor on ESS; it herewith represents one application area of the ESS concept beyond the dominant monetisation context. Our argument is in accordance with this example, focussing, however, on developing a conceptual framework for addressing contributions of ESS to human well-being (beyond poverty). In Section 2.2 we will examine the "standard" framework for addressing ESS-human well-being interrelations, whereas in Section 3 we will introduce an alternative framework grounded in the CA.

2.2. Looking at the Well-Being Dimension of ESS through the MA Lens

In this section, building on the MA (2005), we analyse the ESS concept from the perspective of human well-being, aiming to illuminate some of its specificities crucial for discussing its potential goals, scope and possible applications. Choosing a theoretical lens is essential here since it lays a foundation for how the concept can or should be applied in practice. Let us have a look at some major framings for ESS suggested so far.

The Costanza et al. (1997) and MA (2005) define ESS in terms of the "benefits that people obtain from ecosystems," whereas Daily (1997) refers to the ESS characteristic of "sustaining and fulfilling human life"

(1997: 3). Thus, all of these sources point to the central role of human interests – and the importance of the conception of human well-being – in identifying what ESS are: the characteristics and products of ecosystems, which do not currently meet the requirement of being "important" or desirable are not covered by the notion of ESS. However, in presenting our argument, we neither intend to criticise the anthropocentricity of the ESS concept nor the legitimacy of its use for the goal of biodiversity conservation: this has been done often enough. Rather, we take the idea that ecosystems "benefit" human beings as a point of departure and further develop ideas on how such "benefits" can be conceptualised. To do this, we start with our conceptualisation of well-being and proceed to exploring the various ways in which ESS can contribute to it.

To begin with, let us have a second look at how the MA tackles this task: its vision of the relationships between ESS and human well-being is introduced in Fig. 1 (see also the introductory discussion in Section 2.1). Here, five components of well-being are identified: security, basic material for good life, health, good social relations and the freedom of choice and action, the last one being placed aside from the other four. Linkages between three groups of ESS (NB: excluding supporting services) and each of the first four components of well-being are depicted as one-way arrows, the colour and width of which show, correspondingly, potential for mediation and intensity of the linkages.

One important issue that attracts our attention in this figure is related to the measurement and interpretation of ESS in terms of personal or societal well-being. While it is not trivial how ESS translate into various well-being components, specific details of such a "translation," through either ecological indicators or monetary values or depending on individual circumstances, remain "hidden" behind the figure's arrows. However, merely showing a strong linkage between, say, the provisioning service of food and the basic material for good life on a general level is not enough for an evaluation of ecosystem-dependent well-being in a

specific context. Such a representation conceals effects of a range of factors influencing ESS use, for example, personal and societal factors. Thus, the provisioning service of game, which might be crucial for the purpose of being well nourished, will have different well-being effects for a physically fit person compared to a disabled one, just as for a vegetarian compared to a meat gourmand. Especially in the case of provisioning and cultural ESS, an MA-type framework of direct linear linkages between ESS and well-being components is not sufficient for evaluating the actual well-being effects ("benefits") of ecosystems because people have individual ways of "converting" ESS into the factors of personal well-being. At the societal level, well-being impacts of ecosystems are mediated by conflicts and trade-offs that emerge between various actors (for instance, between those aiming to derive monetary benefits from an ecosystem and those dependent on it for their livelihood); moreover, inevitable tradeoffs between ESS themselves (e.g., Rodriguez et al., 2006) have important implications for well-being of different stakeholder groups. It is therefore crucial to consider the context and examine the process of "conversion" of ESS into well-being components prior to establishing linkages between ESS and human well-being in each particular case. In the following, we will employ the CA for clarifying some of these connections – see Section 3.

Another observation evoked by Fig. 1 regards the MA's fifth well-being component, namely the freedom of choice and action. First, the freedom of choice and action is seen to be "largely predicated on the existence of the other components of well-being" (MA, 2005: 31), as expressed in its placement on the side of the other well-being constituents in Fig. 1. This aspect deserves particular attention from the perspective of the CA (elaborated in Section 3.1). Namely, Sen (1999: 18) sees "freedoms of individuals as the basic building blocks" of human development; hence they are constitutive of human development and not only become relevant once a certain level of other well-being constituents (e.g., basic material for good life) is achieved. The contrast between the MA's and the CA's visions of freedom offers an interesting point for discussion – however, we limit ourselves to this remark and will not address this issue here. Second, whereas the effects of ESS on people's freedom of choice and action are implicitly acknowledged in Fig. 1 (through their contribution to other constituents of well-being), the freedom of choice and action is not shown to impact ESS. However, people's environment-related decisions, based on their freedom of choice and action, can significantly affect the state of ecosystems and the provision of ESS. Thus a feedback loop, i.e., a link connecting the freedom of choice and action and ESS in Fig. 1, could importantly complement the picture by showing how human choices affect the state of ESS and the associated trends of ecosystem condition.

Apart from the issues discussed above, a brief reference should be made with regard to the choice of human well-being constituents presented in the MA. The MA addresses integral components of well-being such as fundamental needs (e.g., security) and the social context (e.g., good social relations). Other important elements like, for instance, issues related to personal development (see e.g., Nussbaum, 2000) could be explicitly included in the list of well-being constituents as well. Further, it appears necessary to reflect upon the extent to which the MA list would reflect locally identified well-being constituents in each specific case. In this regard, it is crucial to consider who defines the issue: one should be careful with overreliance on scientific expertise and underestimation of the human dimension (as pointed out by Menzel and Teng, 2009, for the case of ESS). Stakeholder participation, as also acknowledged by the MA (2005) and characteristic of its sub-global assessments, is required on both sides: with regard to both defining ESS in each concrete case and those constituents of well-being that make one's life valuable.

To summarize, the MA framework is well suitable for communicating the general idea of multidimensionality of both human well-being and ESS; however, it has a few deficits. As we have shown above, it lacks a thorough elaboration of the relationships between the various dimensions of well-being, as well as an explication of their interrelations

with ESS and a concrete "translation" of ESS into human well-being. As a response to these points, we will further examine the well-being dimension of the ESS concept by employing the CA as a theoretical lens.

3. The Capability Approach and Ecosystem Services: A Conceptual Incorporation

3.1. The Capability Approach as a Framework for Human Well-Being

In this section we aim to elaborate on the essentials of the CA and to specify why it represents a particularly suitable framework for examining the ESS concept. Starting with key specificities of the CA, one should mention that the approach was founded by the economist and philosopher Amartya Sen as a critique to standard welfare economics, but also with the aim of proposing an alternative method for policy evaluations.⁴ At its core, the CA rejects both preoccupation with monetary indicators of well-being and the purely utilitarian views on well-being. Concerning the first point, Sen (1999) advocates that income on its own or the resources available to the person cannot be taken as an indicator of well-being because other aspects (e.g., rights and liberties, but also many others) are important as well. Since the same resources may correspond to various "levels" of well-being, reflecting people's diversity and their specific circumstances, they can be at best considered as *means* to achieving certain well-being goals, but not as *ends* or indicators of well-being. For an adequate assessment of one's well-being, aspects beyond income have to be considered as well.

With regard to the second point, namely the critique of utilitarian approaches, which favour the actions yielding the highest personal/societal utility, Sen (1999) advocates that utility measured by mental satisfaction (in contemporary economics often reflected through revealed preferences) represents a poor measure of well-being for a number of reasons. One of them goes back to the issue of adaptive attitudes: continuously deprived and oppressed people living in poor areas might report a high level of utility because they simply get used to the surrounding conditions over time, even though their rights and opportunities are objectively being restricted. Another point of criticism relates to the preference given to mental satisfaction over "creative discontent" and "constructive dissatisfaction"⁵ (Sen, 1999: 19), which may bring about change and improvements in well-being in a longer run but create a distorted picture when analysed within the framework of mental satisfaction. The third point is connected to the monism of utilitarianism, or its failure to reflect the richness of what can constitute an ethical good (Sen, 1987). Substantially, utilitarianism receives Sen's strong criticism for its "indifference to freedoms, rights and liberties" (Sen, 1999: 57) by taking utility as its only informational base.

In turn, CA adherents insist that it is "the opportunity to live a good life, rather than the accumulation of resources, that matters most for well-being" (Anand et al., 2005: 10). The "good life" in the CA is constituted by a vector of *functionings* or a multidimensional combination of "doings" and "beings" that people have reason to value, such as "being educated," "participating in community life," "having self-respect" and many others (CA authors often speak of *achieved functionings* – see Clark, 2008; Robeyns, 2005; Sen, 1999, for terminological issues). Well-being, in turn, goes beyond the notion of achieving specific functionings by including the *freedom* to achieve those—whether a specific functioning has actually been chosen or not. Single freedoms, such as "being able to be well nourished," "being able to study," "being able to express one's

⁴ Compare Deneulin and Shahani, 2009 and Nussbaum, 2011 for recent introductions into the CA.

⁵ To stay terminologically clear, one should mention that the focus in the CA goes beyond exclusively individual's own well-being by including the aspect of *agency*, which embraces non-self-regarding goals and actions, i.e., commitments (see Grasso and Giulio, 2003; Robeyns, 2005). However, here we will restrict the scope of our analysis to the notion of well-being, following the established literature on ESS (such as MA, 2005; TEEB, 2010a, etc.).

mind freely," etc., refer to *capabilities* and altogether constitute the person's *capability set*.⁶ Within this framework, the ultimate goal of development is human flourishing, expressed through the enhancement of one's the capability set (Sen, 1999).

If it is capabilities that constitute human well-being, how can they be enhanced and which factors affect capability formation? In contrast to opulence-based approaches, the CA does not deduce a certain level of well-being from the availability of goods and services. Rather, goods and services are valuable for the person to the extent that they affect his or her capabilities, and here, the specific conditions in which the person makes use of the available goods and services have to be considered. From a CA perspective, goods and services become "converted" through a set of *conversion factors* before their effects on one's capabilities can be distinguished (see Robeyns, 2003, 2005). Conversion factors in the CA can generally be divided into three groups: personal, social and environmental.

The group of *personal* conversion factors characterises how a certain person converts goods and services into capabilities based on her own (bodily, mental, etc.) abilities. For example, having a bicycle (a good) only leads to Nancy's capability to move around freely if she is able to ride it. The group of *social* conversion factors covers such aspects as social practices, gender roles, caste relationships, etc. Following the previous example, it should be socially acceptable for Nancy to ride a bicycle on her own, without being accompanied by a male member of the society, in order for her to have the capability of being mobile. Finally, *environmental* conversion factors can enhance or impede capabilities via conditions such as geographic location, climate, clean air, extreme natural events, etc. In Nancy's case, with heavy traffic or in extreme temperatures, her capability of moving around is restricted due to the respective environmental conditions. In this way, through the notion of conversion factors the CA allows considering factors beyond goods and services which influence people's capabilities, and ultimately their achieved functionings (Robeyns, 2005).

The group of environmental conversion factors appears of particular interest when looking at how ESS can be grasped within a CA framework and will therefore be examined in more detail in the next section.

3.2. The Capability Approach as a Framework for Incorporating Ecosystem Services

So far, the relationship between human well-being and the natural environment has not received primary attention in the CA. As put by Sneddon et al. (2006: 262), "if there is one noticeable gap in Sen's analysis, it is the lack of concern with the environment and ecological changes". More recently, academic contributions on nature and the CA have expanded and comprise works of Ballet et al. (2011), Holland (2008), Rauschmayer and Lessmann (2011) and Scholtes (2010), among others, but none of these conceptualises the impacts of nature on individual well-being. However, we do see conceptual space for addressing nature's contributions to human well-being within the CA. To explore this issue in detail, let us have a look at Fig. 2, showing how a person's capability set is formed.

Fig. 2 illustrates how the specific elements that impact capabilities and ultimately achieved functionings, such as goods and services, social institutions, personal history, etc., relate to each other. However, as the title of the diagram suggests, only social and personal contexts are considered here, while the environmental context is not being

elaborated.⁷ Meanwhile factors of the natural environment obviously played a vital role in shaping people's capability sets and, we argue, have to be explicitly accounted for.

For further developing the framework of capability formation in its environmental dimension, we suggest applying the concept of ESS because it offers a way illustrate the diversity of ways in which ecosystems affect human well-being. At the same time – and this is the main focus of our argument – looking at the ESS concept through the capabilities lens illuminates the diverse roles of ESS in capability formation, leading to a more comprehensive understanding of the human well-being dimension of the ESS concept. Let us start with examining how the three groups of ESS – provisioning, regulating, and cultural – relate to the key elements of the presented model of capability formation, i.e., to the goods and services on the one hand and to the conversion factors on the other hand (Fig. 2). First of all, it is crucial to specify what exactly fits into the category of goods and services and how these are different from conversion factors, particularly with regard to ecosystems. Taking into account the scant guidance provided on the conceptual "demarcation line" between goods and services on the one hand and conversion factors on the other hand (e.g., Robeyns, 2005), let us go through the groups of ESS and examine how they can be linked to the existing CA categories.

As specified by Robeyns (2003), goods (and services) are of interest to the CA because of their specific characteristics which enable certain functionings. Thus, firstly, all ESS can be seen as goods and services in the CA terminology. Most obviously, provisioning ESS, such as fresh water, wood, and medicinal herbs, enter the capabilities model as goods. Regulating ESS can be placed into this category as well: many of them correspond to the functions that human-made infrastructure provides, such as water purification, sewage treatment, stormwater management, etc. Finally, cultural ESS can also be included in the "goods and services" category: aesthetic information, opportunities for tourism and recreation, inspiration for art and poetry, etc. offered by ecosystems are alternatively provided by theatres, opera houses, art galleries, etc., which all count as services in the common economic sense.

All three types of ESS can thus be conceptualised as goods and services and, as such, influence people's capabilities—however, not in a one-to-one relationship. For example, provisioning ESS such as game and medicinal herbs become "converted" into well-being via such factors as health, personal abilities, religious beliefs, etc. Cultural ESS of recreation and education provided by a city park have different well-being effects on representatives of different social strata, people with and without a migration background, depending on the attitudes towards certain social groups, etc. Hence, the real human well-being effects of ESS cannot be concluded on a general level because people "convert" the services provided by ecosystems on an individual basis, and here, sets of personal, social, and environmental conversion factors play a visible role. To compare, in the framework of neoclassical economics the "conversion" is implicit in every individual valuation and no explicit conceptualisation via personal, social, or environmental conversion factors takes place. The result of such a valuation is usually monodimensional (e.g., utility expressed in monetary terms) and thereby highly limited for the purpose of reflecting the multidimensionality of human well-being. In contrast, the CA conception of human well-being relies upon the evaluative space of diverse capabilities and functionings irreducible to each other and is thus inherently pluralistic.

⁶ One should mention that the focus in the CA goes beyond exclusively individual's own well-being by including the aspect of *agency*, which embraces non-self-regarding goals and actions, i.e., commitments (see Grasso and Giulio, 2003; Robeyns, 2005). However, here we will restrict the scope of our analysis to the notion of well-being, following the established literature on ESS (such as MA, 2005; TEEB, 2010a, etc.).

⁷ Where the environmental component is *implicitly* present in the picture is under the title "individual conversion factors"; however, it is not separately distinguished. The category of environmental factors listed under the heading of "social context" appears to refer to the environment in the sense of "surrounding conditions," including factors such as infrastructure: see Robeyns, 2003, 2005.

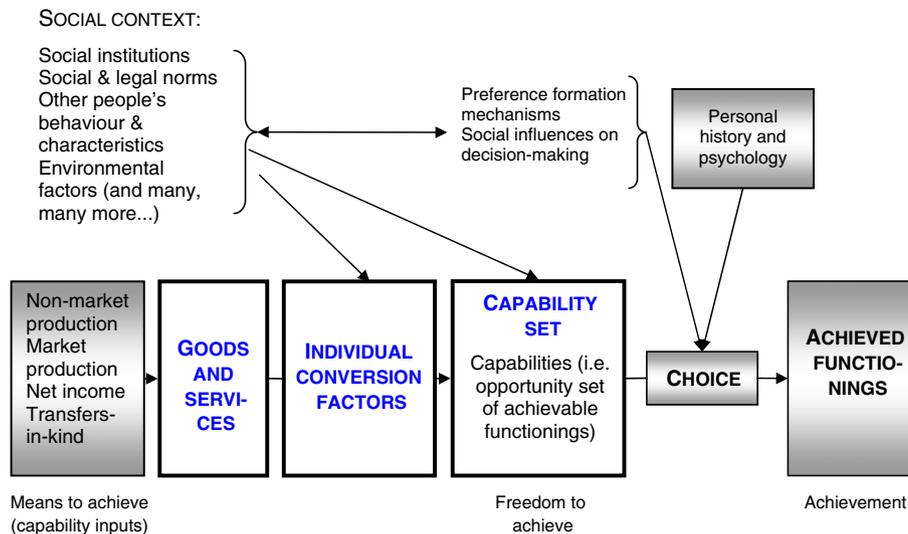


Fig. 2. A stylised non-dynamic representation of a person's capability set and her social and personal context. Source: based on Robeyns (2005: 98).

Apart from perceiving ESS as goods and services, however, we suggest that their role as conversion factors should also be explored. Here, we keep provisioning ESS aside due to their tangible nature and concentrate on the other two groups of ESS: regulating and cultural services. Taking into account that regulating ESS create, affect and maintain many of the conditions of the natural environment (e.g., climate, quality of soil, amount of stormwater, etc.), they fit well into the category of environmental conversion factors, impacting the way people put available resources into use. For example, Nancy's plot of land (i.e., a "good") does not in itself enable a pre-defined range of capabilities for her and her family. However, taking into account regulating ESS of the area, such as erosion prevention and flood prevention, helps to assess the extent to which this land enhances Nancy's and her family's capabilities in reality (e.g., with regard to being able to farm the land and receive high yields). In this way, regulating ESS "convert" available goods and services into the actual capabilities and can therefore be seen as environmental conversion factors. Further, cultural ESS can also play a role of environmental conversion factors in the capabilities model. They, for instance, create conditions for people to put the available resources into use by providing the environment for jogging, sailing, and sky-diving, inspiring for painting and poetry, etc. Moreover, ecosystems provide spaces for socialisation (such as urban parks and golf courses) thus offering cultural services which affect, e.g., social cohesion.

The influence of ESS on capability formation described above can be characterised as direct: by either representing goods and services or conversion factors, ESS can *directly* contribute to generating concrete capabilities. However, indirect and more long-term impacts of ESS can be captured within the CA framework as well: ESS also affect personal and social conversion factors (such as health and education) over time, thus altering these factors of capability formation and *indirectly* leading to an enhanced capability set. To give an example, safeguarding the ESS of air quality regulation may have a direct effect on the capability of breathing without difficulty. At the same it affects people's health in the long run and herewith supports the production of further capabilities, only indirectly linked to improved air quality. This perspective transcends the role of ESS beyond that of goods and services and might help introduce nestedness (of ESS within broader individual contexts) and dynamics (change over time) into the model of capability formation.

Having explored the possible roles of various ESS groups in capability formation, let us sketch a framework (relying upon Fig. 2), which helps to account for the role of ecosystems as both producing goods and services for humans *and* affecting the way people convert resources into capabilities: see Fig. 3. The social and personal contexts

are only briefly sketched here as the focus is placed on the environmental context, particularly on ESS.

Fig. 3 graphically summarises the roles of ESS within the model of capability formation elaborated above. Apart from ESS, the environmental context introduced in the figure also covers the more "static" characteristics of the environment such as climate, topography, and tectonic characteristics. Moreover, we also consider natural resources as part of the environmental context. These embrace non-renewable resources such as oil, gas, and metals, as well as certain abiotic renewable resources not covered by the ESS concept, such as wind and solar energy. All these factors play an important role in capability formation as well but are not represented in Fig. 3 due to our explicit focus on ESS.

What can be learned from our conceptual incorporation of ESS into the capability formation framework? Some advantages and insights of the CA perspective for understanding the ESS concept will be addressed at more length in Section 4. Before turning to these, however, let us first briefly examine how the CA could benefit from the ESS concept. The model we propose illustrates the multifaceted role of ecosystems in capability formation, highlighting the necessity to explicitly include environmental factors in well-being assessments and offering a way of doing so. In particular, the concept of ESS assists in distinguishing between the various environmental conditions in a more detailed manner than currently done in the CA, complementing the scattered examples of environmental conversion factors with a more systematised set of ESS (see e.g., de Groot et al., 2002). Moreover, including ESS could potentially add dynamics to the model put forward by Robeyns (2005) and presented in Fig. 2, firstly, by showing how the environmental conditions worsen, improve, or are maintained over time, and secondly, by embodying the influence of ESS on personal, environmental, and social conversion factors. However, further conceptual work is required in this direction; for example, the concept of ecosystem capacity (Holland, 2010) could perhaps provide useful insight in this regard. Overall, we argue that the CA has to become more environmentally sensitive and account for the diversity of individual environmental contexts in well-being evaluations. The ESS concept could provide a helpful starting point in this task and potentially bridge the gap between the CA and some of the ecological economics literature.

4. Discussion: A New Understanding of the ESS Concept and Implications for Cultural ESS

Having presented the exercise of a theoretical "incorporation" of the ESS concept into the capabilities framework, we will now address

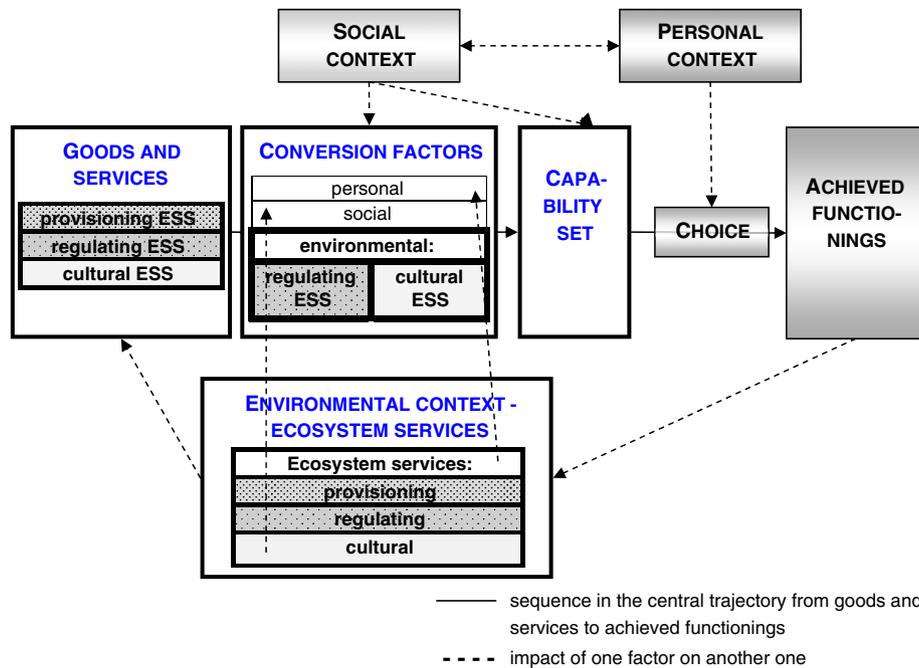


Fig. 3. A representation of a person's capability set formation focused on the contribution of ESS.

some of the important implications stemming from it. Starting with the human well-being dimension of the ESS concept, we will proceed to some of the implications for cultural ESS, which have been only modestly analysed in the literature so far.

Going back to the emergence of the ESS concept, we notice that the “utilitarian framing of ecological functions as ecosystem services” (Gomez-Baggethun et al., 2010: 1215), which took place in the 1970–1980s, shaped the way ESS have primarily become understood and conceptualised. In this way, a utilitarian framework has from the outset moulded the perception of human-ecosystem relationships in the ESS concept. On a general level, until now “a lack of explicit inclusion of the human dimension (e.g., people's values and needs)” (Menzel and Teng, 2009: 907) has been characteristic of a substantial number of studies and research projects on ESS. Although the MA (2005) does address linkages between groups of ESS and various well-being components, the relationship between the notions of “benefits” and “services” requires more scrutiny as these are not, in fact, substitutable categories (for one explanation of differentiations between the categories, see also TEEB, 2010a).

If the CA lens is applied instead of a utilitarian framing, the relationships between ESS and human well-being become illuminated in a richer way compared to the MA version presented in Fig. 1, but also compared to the more recently presented TEEB vision (TEEB, 2010a). Due to the multidimensionality of both the CA and the ESS concept, the CA offers a particularly suitable framework for examining the diverse impacts of ecosystems on human beings. On the one hand, provisioning, regulating, and cultural ESS can indeed be seen as “goods and services” which contribute to human well-being, as can also be inferred from the MA (2005) representation. However, this relationship is not straightforward in reality: the relevant conversion factors have to be considered before the actual effects of these services on well-being can be identified. On the other hand, cultural and regulating ESS can as well play the role of conversion factors in the CA model, since they affect the ways in which goods and services available to the person become “converted” into capabilities in a specific context. Beyond that, ESS as part of the broad environmental context also impact certain personal and social conversion factors over time, such as health, education, and social relations. Such a vision reflects the genuine diversity of ESS

contributions to human well-being and could importantly enrich the understanding of the human dimension of ESS.

This perspective might provide potential for a better understanding of particularly cultural ESS, which have received scant attention in the recent literature (e.g., Schaich et al., 2010; for a remarkable exception, see Chan et al., 2011). In the majority of existing empirical contributions on cultural ESS, the primary focus lies on recreation and tourism as well as aesthetic information (e.g., Tyrväinen et al., 2007; USEA, 2008). These can be relatively easily modelled by market-like situations and are to some extent being captured by neoclassical valuation methods. Other categories, being more difficult to grasp and to translate into economic terms, are often left out from ESS assessments. However, ecosystems provide a broad range of cultural ESS beyond those currently measured. The MA (2005), for instance, identifies six dimensions of key human-ecosystem relationships: cultural identity, heritage values, spiritual services, inspiration, aesthetic appreciation and finally, recreation and tourism, but there may be many more (see e.g., Chan et al., 2011). These multiple contributions have to be carefully considered – and potentially included – in well-being assessments.

As a response to the lack of conceptual work on cultural ESS, we address specifically this type of services here from the perspective of the CA. Focussing in the first place on Duraiappah (2004), MA (2005), Nussbaum (2000) and Sen (1999), we notice that identifying the ways in which ESS contribute to human well-being essentially depends on how we define human well-being in the first place. Thus, one can distinguish a higher number of linkages between cultural ESS and the various constituents of well-being if more of the “non-elementary”⁸ aspects of well-being are included in the analysis. Consider, for instance, the 10 central capabilities as well-being constituents proposed by Martha Nussbaum.⁹ An analysis of how cultural ESS contribute to human well-being conceptualised through these 10 capabilities shows that cultural

⁸ Sen's (1999: 36) elementary capabilities refer, for example, to “being able to avoid such deprivations as starvation, undernourishment, escapable morbidity and premature mortality.”

⁹ According to Nussbaum (2000, 2011), the 10 central capabilities are life, bodily health, bodily integrity, senses, imagination and thought, emotions, practical reason, affiliation, other species, play, and control over one's environment.

ESS can contribute to the majority of them (e.g., senses, imagination and thought, affiliation, other species, play, etc.), even though Nussbaum herself puts forward only one category – “other species” – explicitly focused on the natural environment. At the same time, *Duraiappah's (2004)* report allows explicitly connecting cultural ESS to only 1 out of the 10 identified well-being constituents, namely, “being able to continue using natural elements found in ecosystems for traditional cultural and spiritual practices”.¹⁰ The fact that only one explicit reference to the effects of cultural ESS is being made arguably goes back to the report's focus on poverty (and hence on other, more “pressing” issues) rather than to the conscious underestimation of the role of cultural ESS. From such comparisons one could infer, however, that depending on how well-being is conceptualised, cultural ESS can be seen to play a more prominent or a more modest role in generating people's capabilities. Accordingly, this should be reflected in human well-being assessments which intend to cover the environmental dimension of well-being.

Yet another comment should be made on the necessity to consider the relevant conversion factors (in particular, the social context) when addressing effects of ecosystems on human well-being. Taking the urban context as an example, one can argue that urban ecosystems such as parks, forests, and lakes represent important meeting points for the citizens, “thereby contributing to both cultural diversity and, paradoxically perhaps, social cohesion in the city” (*Elmqvist et al., 2004: 309*). Green spaces as “socialisation points” provide useful examples for analysing contributions of ESS to people's capabilities; however, the broader social context has to be factored into the analysis as well. Thus, if an urban park is largely “at the disposal of certain groups, namely those from the middle and upper classes” (*USEA, 2008: 13*), it enhances capabilities of the “privileged” groups while restricting capabilities of the lower social classes, ethnic minorities and other often disadvantaged groups. Hence, just like the individual conversion factors are nested within the broader personal, societal and environmental contexts, so are ESS: their impact on human well-being also depends on the wider conversion factors they are embedded in.

Despite – or perhaps exactly because of – this complexity, we believe that the CA provides a fruitful framework for examining the ESS concept, transcending the often mono-dimensional notion of benefits and illuminating the diverse roles that ESS can play in enhancing human well-being. A CA perspective, in making a distinction between resources and conversion factors, for example, helps to more clearly differentiate between the notions of ecosystem “services” and “benefits”: whereas “services” correspond to desired ecosystem functions overall, the concept of “benefits” rather denotes the already “converted” services, accounting for the variety of other relevant factors. In this way, a CA perspective allows us to analyse the factors of capability formation and specifically ESS in their nestedness, reflecting the complexity of both the CA and the ESS concept. With regard to cultural ESS, the suggested framework allows studying the effects on human well-being in their diversity and with more scrutiny than has been done so far.

5. Conclusion

Our argument has been that there is an alternative way of understanding the human well-being dimension of the ESS concept apart from the utilitarian lens. Conceptualising well-being in the framework of the CA, we view ESS as contributing to human well-being

¹⁰ The 10 elements of well-being according to *Duraiappah (2004)* are 1) being able to be adequately nourished; 2) being able to be free from avoidable disease; 3) being able to live in an environmentally clean and safe shelter; 4) being able to have adequate and clean drinking water; 5) being able to have clean air; 6) being able to have energy to keep warm and to cook; 7) being able to use traditional medicine; 8) being able to continue using natural elements found in ecosystems for traditional cultural and spiritual practices; 9) being able to cope with extreme natural events including floods, tropical storms and landslides; 10) being able to make sustainable management decisions that respect natural resources and enable the achievement of a sustainable income stream.

in the form of enhancing people's freedoms to lead the lives they have reason to value, as well as influencing their actual achievements. By looking at ESS through the capabilities lens, we have shown that effects of ESS on well-being can be analysed in different “roles”—as goods and services, as conversion factors, and as elements of the environmental context affecting personal and social conversion factors over time. Such a view broadens the understanding of the human dimension of the ESS concept and thereby provides an alternative to the mainstream, mainly utilitarian framing. Thus, by introducing the CA perspective we hope to enrich the existing discourse on ESS and shed light on its less studied human well-being aspects.

By applying the CA framework to ESS, we have demonstrated that the ESS concept can be used in a diversity of contexts, e.g., beyond the increasingly popular PES programmes. The CA could help address ESS-related issues in policy-making by providing a frame of reference alternative to the mono-dimensional utilitarian analyses. To the benefit of the CA, incorporating the ESS concept into the capabilities framework can lead to improved evaluations of well-being through explicit inclusion of the environmental dimension in well-being assessments. We thus see high potential in the concept of ESS with regard to its role in addressing effects of ecosystems on human well-being—and more research from diverse perspectives is certainly required to make the proposed framework applicable in practice. We also stress the need for more research specifically on cultural ESS and argue that it is important to explicate the concrete conceptualisation of well-being when analysing human well-being effects of cultural ESS, accounting for both social and individual diversity. The CA offers a particularly promising framework for addressing these issues since it explicitly accounts for the diversity of people and individual circumstances.

Our conceptual integration can not only enrich the application of both the CA and the ESS concept on their own. It also provides a potential vehicle for combining these two approaches with divergent intellectual heritages but ultimately aimed at the same goal of improving human life.

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