

Article

Planting Trees for Publicity—How Much Are They Worth?

Jakub Kronenberg ^{1,*} and Joanna Mieszkowicz ²

¹ Department of International Economics, University of Lodz, Lodz 90-255, Poland

² Aeris Futuro Foundation, Krakow 31-141, Poland; E-Mail: jmieszkowicz@aeris.eko.org.pl

* Author to whom correspondence should be addressed; E-Mail: kronenbe@uni.lodz.pl;
Tel.: +48-42-6330857; Fax: +48-42-6354810.

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Abstract: Corporate marketing departments use trees and forests for advertising and public relations (PR). Trees and forests constitute a tangible symbol of the environment, reinforced by the growing awareness of the role that trees play in preventing climate change. Although the carbon sequestration function of trees is valued in monetary terms, its derivative services to marketing, CSR or HR departments are not (‘greening the image’). We focus on voluntary carbon offsets and other tree-planting activities undertaken by companies, aiming to demonstrate that the value of these derivative services of trees should be considered in monetary terms. Based on a small survey and an analysis of financial data for 10 tree-planting projects in Poland, we estimate this value at USD 7.42 per tree. This value depends on external circumstances, such as the current interest in climate change and ways to prevent it.

Keywords: forest services; trees; public relations; corporate social responsibility; green marketing

1. Introduction

The value of forests is often perceived through the lens of goods and services that forests provide (*cf.* [1,2]). Examples of goods include timber and non-timber forest products, such as mushroom, fruits and other edible plants, medicine, game animals and rubber. Apart from these direct benefits, forests provide services such as carbon sequestration, water retention, erosion prevention,

recreation opportunities *etc.* The recent surge of interest in climate change [3], and the resulting increase in environmental awareness [4], exposed some of those services to the general public [5-7]. As a result, at least in developed countries, the general public increasingly associates trees and forests with benefits and the aim to save trees, care for trees and plant trees is widely supported [8-10]. Many companies have identified a new opportunity to improve and green their image by getting involved in tree/forest planting and thus “preventing climate change” [11-13]. Voluntary carbon offsets and tree-planting social events for employees and other stakeholders provide the most common examples of how companies use this new opportunity [14]. Planting trees is also used as a form of “establishing lasting legacies” by the organizers of conferences and various other events [15]. Furthermore, some companies realize that well kept trees in commercial districts increase consumer satisfaction and encourage higher spending, additionally offering opportunities for place branding [16,17]. It has also been observed that the presence of trees generates higher rents from renting offices [18] and higher prices in the real estate market [19,20].

While much attention has been paid to the benefits that trees generate for core business departments (such as sales), the value of forests as a promotional theme has been overlooked so far (see [1,2,5]). The latter is exploited by corporate marketing (in particular public relations, PR), corporate social responsibility (CSR) and human resources (HR) departments. Although it is related to both carbon sequestration function and aesthetics, this value reflects further services delivered by forests. Adopting the perspective of a company that spends money on a voluntary carbon offset or another tree-planting activity, we attempt to estimate the value of trees planted through such activities in Poland. Our study is based on a small survey of companies involved in tree planting with the Aerus Futuro Foundation.

In the following section, we refer to forest services exploited by corporate marketing, CSR and HR departments and, in Section 3, we suggest that the value of some of these services could be captured in economic terms. Sections 4 and 5 present and discuss the results of our research, and Section 6 concludes.

2. Background

Corporate marketing departments use trees and forests principally for advertising and PR (for examples of this, see [21]). By using images of trees in advertising, managers attempt to extend the symbolism of trees to companies themselves. This includes the positive associations of strength, endurance, vitality, life, growth and future, easily translated into the language of marketing [22,23]. Furthermore, as trees constitute one of the most tangible symbols of nature, companies tend to present themselves as friendly toward trees (not harming trees, hugging trees)—expecting the addressees to make a connection: “a tree-friendly company must be a nature-friendly company” [21]. The latter is also exploited by PR, CSR and HR departments, getting involved in tree planting, either within voluntary carbon offsets or within tree-planting corporate events (e.g., [24-27]). Alternatively, some companies simply take good care of their green surroundings, improving the visual attractiveness of their sites and adjacent areas (see e.g., the Brightsite Project carried out within the Clean Business Program in Poland [28] or the earlier examples of merchants using trees to attract customers [16,17]).

Carbon offsets harness the carbon sequestration function of trees, perceived as one of the most valuable forest services [2]. Indeed, the carbon sequestration market is said to have the biggest potential for growth, out of all of the forest services markets [29]. We focus on voluntary market only

offsetting (the value of which constitutes 1–2% of the value of the total carbon offset market [30]). Furthermore, we only analyze forest-based carbon offsets (the following authors provided exemplary reviews of this market: [13,31–35]). The share of forest-based projects in voluntary carbon offsets is decreasing as other types of offsets gain importance, in particular investment in renewable energy and energy efficiency. However, forest-based projects continue to play an important role because of their tangible character and the resulting popularity with “ordinary” consumers [13,32,36]. Since the first large agro-forestry corporate carbon offset project in the late 1980s, it has been evident that these are important PR undertakings [31]. Finally, we restrict our research to projects carried out by companies themselves and not related to offsetting emissions through the market as it is the kind of activity in which PR, CSR and HR departments are principally involved with regard to tree-planting.

Companies often build upon the basic tree-planting projects aimed at carbon sequestration by planning events around the planting itself; celebrating it and using it extensively for promotional purposes. Indeed, tree-planting events can also be organized independently of carbon offsets; for employees or for invited stakeholders, such as customers, local authorities or children. Depending on intended addressees, voluntary offsets and related events can fall within the bounds of the PR, CSR or HR departments. Thus, voluntary carbon offsets and other tree-planting initiatives are motivated by the need to green a company’s image or demonstrate its charitable profile.

Poland provides an interesting example to study the above issues for at least three reasons.

1. Poland is at the early stage of implementing sustainable solutions which are already well established in developed countries [37,38]. Thus, Polish companies are only starting to perceive the value of trees which companies from developed countries have been exploiting for a longer period. As there are relatively few companies that undertake such activities, it is clear that the frontrunners expect the most significant improvement in their image.
2. Greenhouse gas emissions decreased significantly in Poland during the transition period (33.2% decrease in CO₂ equivalent between 1988 and 2009 [39]). Thus, Polish companies are less affected by obligatory carbon emission limits and forest-based carbon offsets and other tree-planting projects carried out in Poland are almost only voluntary.
3. This market is relatively easy to analyze as there are few organizations offering voluntary carbon offsets and arranging other tree-planting activities, with the Aeris Futuro Foundation playing a major role.

The Aeris Futuro Foundation’s mission is to effectively counteract climate change, protect and enhance biological and landscape diversity, support the development of local communities and promote corporate responsibility. The Foundation is the first in Poland to emphasize the role of trees in climate change mitigation with its long-term program TIME4FOREST (CZAS NA LAS). It created also the first CO₂ Calculator in Poland to measure a company/an individual’s carbon footprint and the number of trees necessary to offset it. The Aeris Futuro Foundation has already planted nearly 800,000 trees around Poland that will offset approximately 60,000 tonnes of CO₂. In 2010, the Aeris Futuro Foundation created the first Polish standard for sustainable events. It also provides recommendations to Polish Ministries of Economy, Environment and Foreign Affairs, as well as to the organizers of the 2012 UEFA European Football Championship to be held in Poland and Ukraine.

3. Method and Data

Planting trees (and forests) is a visible and highly symbolic undertaking and is expected to benefit the company image. We assume that companies' perceptions of the value of trees (forest) are reflected in how much they spend on planting trees or maintaining existing forests. This extends beyond the value of carbon sequestration alone—tree planting provides a pretext for a PR/CSR/HR event; a promotional theme. Even if the focus is on carbon sequestration, within voluntary programs this is centered on improving the image of a company and not on a formal compensation for environmentally harmful behavior. Finally, we assume that managers are rational economic agents and, having an opportunity to invest in different projects, they make their decisions based on an expected return on investment (ROI) of all projects under consideration. Thus, the value they attribute to trees is further inflated by the expected ROI in tree planting.

It is possible to elicit lower and upper estimates of the value that trees constitute for companies using them as a promotional theme. What companies pay for having the trees planted within carbon offsets or tree-planting events indicates the minimum value they attribute to those trees greening their corporate image and increasing their market value (lower estimate, LE). The upper estimate (UE) reveals how much they expect to earn, based on ROI in tree planting: $UE = LE \cdot (1 + ROI)$. The real value of the trees for a company would need to reflect the increase of its market or share value following the tree-planting activity. However, as the scale of tree-planting activities is modest relative to the overall activity of companies undertaking them, and as companies tend to undertake many image-improving activities at the same time, isolating the impact of tree-planting on the value of a company would be difficult, which justifies our approximation. This requires reference to two additional issues: Can companies really expect these expenses to pay? and How it is possible to calculate ROI on PR/CSR?

The decision to use the LE or UE is linked to the ongoing debate on the relationship between corporate social and environmental performance, and profitability, which still has not produced definite conclusions [40-43]. A company's CSR activities appeal to consumers motivated by social and environmental implications of consumption, often borne of a broader understanding of negative externalities. These initiatives help to create a corporate identity with which consumers can identify themselves. Thus, getting involved in CSR permits companies to strengthen relationships with their customers (and other stakeholders) which improves profitability. However, the relationship between CSR and market value depends on corporate abilities (*i.e.*, product quality and innovation potential) which also include the ability to devise a PR/CSR strategy that fits into consumer expectations. The relationship will be negative for companies with low corporate abilities and positive for those with high corporate abilities [41].

We adopt a view that any marketing activity *aims* to improve customer perceptions, leading to increased customer attraction, increased customer retention and, eventually, increased sales and profits. To choose between various options that might improve the above parameters, companies have to accurately identify and evaluate the options available [44,45]. Accordingly, PR and CSR managers need to be able to demonstrate the benefits of their activities (attracting consumers through improved reputation and image) in financial terms so as to secure resources for their future functioning. Using ROI ensures the comparability of results of each competing activity. However, there is an ongoing discussion on whether and how to calculate ROI for PR or CSR investments (for a summary, see [46];

for more information, see [47-51]). The effects of PR and CSR on sales and profits are difficult to capture and relatively few companies use this indicator, which has indeed been reflected in our findings. A review of about 20 PR textbooks published in Polish and consultations with national experts on marketing evaluation and CSR revealed that the use of PR or CSR ROI is almost non-existent in Poland and, instead, qualitative measures are used [52].

Nevertheless, from the point of view of economics, if a rational manager can invest the same amount in an activity characterized by a high ROI, this manager would have no incentive to choose an activity with no return. Therefore, even if PR or CSR ROI is unknown or if a company does not reveal it, it is still reasonable to expect one. In such a case, we suggest either using the general ROI for the core activity of a company or assuming the rate revealed by other companies in the sample.

This brings us to our study which consisted of two elements: a survey of companies involved in tree planting with the Aemis Futuro Foundation (AFF) and an analysis of financial information for tree-planting projects carried out by those companies. AFF organizes both carbon offsets and tree-planting events for companies. Compared to other NGOs and companies present in the Polish market, AFF's offer is more diversified (both offsets and events), and more professional (including the first Poland-specific CO₂ calculator). AFF's projects involve both forest renewal and afforestation and, depending on a project, 1/2 to 1/14 trees are expected to survive 80–120 years, based on the estimates by foresters involved in each project. In our calculations, we consider the final expected number of trees only. Our sample included projects that aimed at planting from 100 to 16,600 trees (900 to 166,000 saplings respectively).

The sample covered eight companies responsible for planting about 99.3% of the trees planted by AFF in 2006–2008. They carried out 12 tree-planting projects (two of which we rejected because of their distinctness). Of these eight companies, three continued tree-planting projects in the following years, including those that carried out the largest projects in 2006–2008, and the other five did not continue this activity. For reference purposes, we surveyed one additional company using tree planting as a PR/CSR tool but not cooperating with AFF. In each company we surveyed departments responsible for tree-planting activity (PR, CSR, HR). We sent out short questionnaires and, where necessary, followed up with the companies by telephone after a week. All companies responded, due to the questionnaire's simplicity and AFF's good relationships with its partners. In the survey, we:

- gathered information on the motivation and use of tree planting for promotional purposes;
- tested whether companies study the effectiveness and efficiency of this PR/CSR tool (whether they research consumer attitudes towards tree planting and whether they calculate return on these investments, respectively).

We used financial information about the 10 afforestation and reforestation projects to establish the value that companies attribute to trees, in line with the above reasoning. Unlike in most studies, which focus on the valuation of hectares of forested land, we estimated values for individual trees, for two reasons:

1. Because of the early stage of development of the PR/CSR tree-planting market in Poland, some projects involved planting less than a hectare of forest.
2. Trees (and saplings) are accounting units for AFF and cooperating companies.

Both voluntary carbon offsets and tree-planting events entail three categories of expenses that companies have to bear:

1. direct costs: choosing and preparing the area, saplings, transportation of saplings, planting, nurturing (up to 5 years);
2. primary indirect costs: items and services necessary if employees or other guests participate in planting: training, foresters' supervision, gloves, transportation; memorial stone or plaque; coordination and management;
3. additional indirect costs: meals for employees and other guests participating in an event; additional entertainment (e.g., workshops, concert, competition, visits to a national park); gifts, souvenirs, prizes.

Tree-planting organizations offer flexible services, from tree-planting only, to complete tree-planting events for as many employees or guests as the company wishes. While primary indirect costs are unavoidable (even if a company decides to plant trees on its own, it will always need advice on where to plant trees and which species to use, a coordinator and basic equipment), additional indirect costs do not have to be borne. All of these costs are included in our calculations, as without the overarching idea to plant trees the whole event would not have been organized. This reflects an additional value of a forest as a pretext for social events, which aim to illuminate the connection between the company's image and the potent symbolism of trees.

In short, we use the following formula to calculate an average value of a tree:

$$UE = \frac{\sum_{i=1}^{10} (DC_i + PIC_i + AIC_i)}{\sum_{i=1}^{10} p_i \cdot x_i} \cdot (1 + ROI)$$

where DC_i , PIC_i and AIC_i are direct, primary indirect and additional indirect costs for project i , p_i is the estimated rate of trees surviving 80–120 years per project i , and x_i is the number of saplings planted within project i .

4. Results

Having described our approach, we now report and discuss the findings of our survey and financial analysis. Out of nine companies, only two ran small-scale carbon offset projects (one of which declared planting trees both within and outside the scope of offset activities). The other seven did not relate tree planting to their CO₂ emissions.

Interestingly, eight companies declared the intrinsic value of environmental protection as a reason for their tree-planting activities. This was followed by publicity (image) concerns, cited by six companies. The other three options: distinguishing themselves from competing companies, HR activity and fulfilling the mission of a company, were each indicated as motives by two firms. However, in reality, each company used tree planting for promotional purposes, referring to it in its CSR reports and websites (6 companies each), press releases (5), annual reports (3), other communication channels (2), and advertisements (1). This indicates that declarations regarding the intrinsic value of environmental protection might have also been part of PR activity of those companies. Furthermore, even if people

employed in a PR or CSR department are truly motivated and believe in the altruistic activity of their company, they still depend on funding from top management levels and this depends on management seeing a potential benefit in PR activities.

Regarding the effectiveness of tree planting as a PR/CSR tool, none of the nine companies studied consumer attitudes towards tree planting by a company. Clearly, the companies assumed that consumers are interested in such activities based on their general knowledge of current consumer attitudes and international trends in fashion and politics.

The companies were similarly passive about the efficiency of tree planting as a PR/CSR tool. Only one declared using an expected ROI on tree planting activity (25 percent) and complemented this answer with a comment that calculating this indicator was difficult. Indeed, some managers were surprised by this question and suggested that they did not “imagine that they could earn profit by planting trees”. This is in line with an argument that “(p)rofitability should not be the primary rationale for corporate social responsibility” [42] and thus that companies can act responsibly for the sake of doing so. However, this contrasts with survey results of Taiyab [32] who found cost-effectiveness to be an important factor influencing the choice of carbon offsets. It also contrasts with standard economic reasoning that economic agents are motivated by profit. Even if a direct association between an investment and its return is fuzzy, the effect is expected to appear after a delay or as a result of a number of factors which are not easily identifiable. We agree that the effects of tree planting may be treated broadly, not only in terms of direct financial performance (just as the effects of other CSR activities, *cf.* [53]), but maintain that this is one of the reasons why they ultimately should turn out to be profitable. Therefore, in our calculations, we extend the 25% ROI to the whole sample.

The costs of planting trees are presented in Table 1, reflecting how much companies paid for using trees to green their image. In line with our reasoning presented in Section 3, these indicate the values that the planted trees have for companies. The average value reflected in expenses made by the companies surveyed was 5.93 USD per tree, which gives an upper estimate value of 7.42 USD. We used yearly average USD/PLN exchange rates for the relevant years. The direct costs of trees ranged from 4.48 to 10.16 USD (for the largest and one of the smallest projects, respectively). The total cost ranged from 6.11 to 41.53 USD per tree. For one of the rejected projects, the total cost was an extreme USD 162.50 per tree and it referred to both trees and shrubs; reflecting that additional indirect costs were particularly important in its case.

In the case of different projects, either direct, primary indirect or additional indirect costs dominated other cost categories. Still, we argue that all of these costs reflect the value of forests to companies using them for publicity. Large projects deflated average values for the whole sample because of economies of scale, and because the tree planting itself counted more than the related activities in these cases. Small projects were generally more costly—not only because of diseconomies of scale but also because they had a different intended purpose: they served as social activities arranged by PR/CSR/HR departments. Thus, they involved additional costs not incurred in projects where professionals were contracted to plant the relevant trees. In these cases, tree planting only served as a pretext to organize a memorable corporate event.

Table 1. The value of trees as a publicity theme covered by our study, based on 10 tree-planting projects surveyed within our study (current USD per tree).

		Total	Min. record	Max. record
Lower estimate	Average direct cost	4.16	3.59	8.1
	Average primary indirect cost	1.49	1.30	13.7
	Average additional indirect cost	0.28	0	12.4
	Average total cost	5.93	4.89	33.2
Upper estimate	Average direct cost	5.20	4.48	10.1
	Average primary indirect cost	1.86	1.63	17.2
	Average additional indirect cost	0.46	0	15.5
	Average total cost	7.42	6.11	41.5

5. Discussion

There are no markets for some forest goods and services, and to know their value we need to look for surrogate markets. In the case of forests serving as a promotional theme, a payment is made to an agent who organizes voluntary carbon offsets or other tree-planting events. The agent eventually transfers part of this payment to forest owners (or leaseholders), in exchange for planting the desired amount of trees in their forest (or agreeing to have those trees planted by the donor's stakeholders) and committing to maintain them for 80–120 years. In the case of companies that take part in voluntary carbon offsets and other PR/CSR tree-planting events, this may reflect those companies' perceptions of how their customers value forests. However, as companies admit, they do not study customers' preferences regarding tree planting, and use assumed preferences only. The fact that companies spend part of their promotional budgets on tree planting ultimately reveals the value that forests have for those companies—forests and trees serve as a pretext to improve their publicity (image). Without forests' ecological functions and their resulting appeal to society, they would not have such value for companies. In our opinion, this reflects the potentially overlooked benefits of forests and trees.

Providing services to PR/CSR departments does not preclude other functions of a forest (such as water retention or recreation opportunities). Thus, this value should add to other values of the same forest and not be their substitute. The only exception would be logging trees for timber as contracts signed within the described projects require foresters to maintain these trees for 80–120 years (not allowing them to be cut before this time).

Three issues need further elaboration: How do these values compare with other values of forest services? What are the limitations of this approach? and In what ways could it be improved? To make our results comparable with most other studies, we need to translate them roughly into values per hectares. Assuming that there are about 500–600 trees in a hectare of a mature forest (80–120 years), our estimates would be USD 3708–4449 per hectare respectively (UE). Although it would be possible to convert individual trees into hectares in the case of each individual project, it is impossible to make a reliable gross conversion because of the specificity of each project (tree species, type of forests *etc.*). Moreover, one has to be careful with such conversions as, in their promotional materials, some companies only provide information on how many saplings they plant without including detailed information on how many of them are expected to survive and become mature trees. The percentage of surviving trees also depends on project-specific circumstances. Clearly, the estimated value of

USD 3708–4449 per hectare is high compared to most other valuation results for forest goods and services that range from just above zero to several thousand USD per hectare (*cf.* [2,54]). However, our results can be compared not only to other valuation studies, but also to company expenses for marketing and, in particular, for promotional and HR events. In the latter case, our results would remain negligible. Finally, in the case of tree planting for publicity, an expense is paid up front, reflecting the value of trees providing their services for 80–120 years.

The above considerations demonstrate one of the limitations of our approach—it only applies to trees planted within voluntary carbon offsets and other PR/CSR/HR activities. More importantly, the elicited values depend on whether preventing climate change or solving other ecological problems through tree planting is perceived as trendy, as this warrants business demand for such services. Differences in project character and its expected effect result in a great spectrum of costs (and values). These values may also depend on the level of development of a given market. On one hand, the market is still underdeveloped in Poland; with its further development the costs (and the values) are likely to decrease. On the other hand, a forest may be worth less for a company in Poland than for a company in Switzerland, because of the different levels of economic development. Nevertheless, the above limitations also affect other valuation techniques, which often refer only to a single given ecosystem, are highly diversified within a sample, and depend on the societal context of revealed or stated preferences and on the level of development of a given market.

It may seem that this approach neglects the ecological services provided by forests—a tree plantation might be worth as much as a replenishment of a mature forest (reforestation). This is not the case because replenishing a mature forest is more costly and because companies are most interested in having their tree-planting events in the most spectacular and ecologically important forests for which they are willing to pay higher prices. Also, organizing an event in a “famous” forest involves higher additional indirect costs (and transportation costs if it is far from the company).

Even though, in our view, this approach captures the values of trees serving as a promotional theme, it would be useful to:

- test it on larger markets, with more developed institutions offering voluntary carbon offsets and other tree-planting services;
- refine it with reference to what to include in various categories of costs (e.g., adding the value of time spent on tree-planting activity by company employees); and
- study decisions made by consumers choosing companies planting trees/forests because of their perceived superiority over non-tree-planting companies.

6. Conclusions

Three conclusions close this commentary. (1) It is always worthwhile to search for thus far overlooked values of ecosystem goods and services, as (2) these values are dynamic and depend on a broader social context within which they are revealed. The value of trees serving as a publicity theme provides a good example, and indeed, (3) it also offers a good example of sustainable branding.

Growing awareness of global warming, and widespread discussions on how to prevent it, have exposed the elementary services of trees to the general public. This appeal has been exploited by PR/CSR/HR departments attempting to extend the positive features of trees to their companies and

demonstrates how tree (= environmentally)-friendly they are. More than ten years ago, the world market for carbon sequestration services was not yet organized [31] and other corporate tree-planting activities were scarce. This has changed with the ongoing debate on global warming. Now companies use an international carbon offsets market (including its voluntary segment) and new instruments, such as payments for ecosystem services, and based on the prices they pay the value of carbon sequestration is easier to estimate. However, companies also attribute significant values to trees because of other reasons, as reflected in the expenses they make on planting trees for publicity. Similarly, a diversified and dynamic economy offers many further opportunities to look for other sources of value in nature.

Companies perceive the value in nature and are able to use it for their own purposes. Most often, at least in Poland, their tree-planting activities are not motivated by a thorough analysis of costs and benefits, but by more general observations of consumer preferences. The exact value that tree-planting activities have for companies depends on how these activities affect the market value of those companies. As this impact is difficult to isolate, assuming that managers are rational decision makers, we can only rely on some approximations, based on the related costs and the expected return on investment.

Companies are using trees and tree-planting activities to improve their image and brand perception. This is similar to what cities have been doing so far, planting trees to improve their image [55,56], either within individual initiatives, with the classical example of Chicago [57], or through broader programs, such as the Tree City USA managed by the National Arbor Day Foundation [58,59]. Similar labelling programs are now available in the case of voluntary carbon offsets [10,13]—what used to be a niche market is now broadly exploited. To differentiate themselves from others, companies often seek external support, e.g., through cooperation with specialized agents, such as the Aeris Futuro Foundation, or by implementing particularly innovative projects on their own. Corporate inventiveness in the area of branding and marketing will surely lead to the emergence of further new ideas on what services to derive from nature.

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