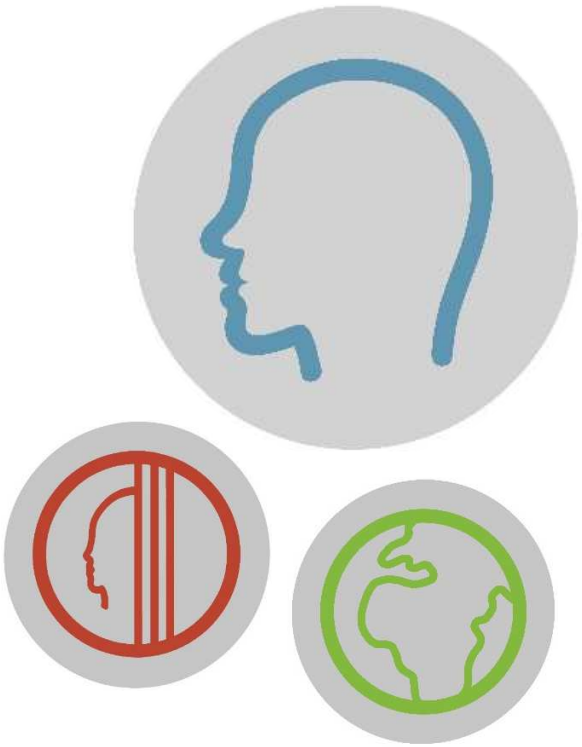

Expected value of incremental future earnings – assessment method

Companies are increasingly challenged to identify and communicate their societal contribution. The Ecomatters methodology for assessment of the expected value of incremental future earnings is developed to quantify the development of employees upon involvement in production, as allocable to a company or value chain link.

Importantly, the design of the methodology for assessment of the expected value of incremental future earnings allows for application in parallel with similar methodologies covering other relevant societal and environmental (value chain) impacts. The combined results can support the identification of improvement opportunities and facilitate effective communication and decision making processes.

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Introduction

In today's business environment, adopting a business strategy centered around people and the planet is essential to a company's profitability. Where traditionally the externalities of production (the effects on people and the environment) were of little consequence to a company's branding, risk profile or cash flow, companies currently find that by increasing their positive and decreasing their negative impacts they can grow their revenue, cut costs and reduce risk.

Various methods have been developed over the last decades to identify, measure and valuate societal impacts. Since social effects are highly diverse, the general approach is to assess externalities per social aspect. One of the identified social aspects of importance is the development of employees upon involvement in production, which is measured as the expected growth in salary. The created value is referred to as 'expected value of incremental future earnings'. This paper discusses the methodology for the assessment of expected value of incremental future earnings by Ecomatters and illustrates the specific procedure using an employee-specific example.

1 Goal Setting

The goal of assessment of expected value of incremental future earnings by Ecomatters is to gain insight into and quantify the development of employees upon involvement in production. To ensure its applicability in a variety of settings, the assessment methodology follows a pragmatic and flexible approach. As a first step, it provides a procedure for evaluation of expected value of incremental future earnings at company level. Its modular design further allows for the extension of the assessment to cover one or multiple levels of the product value chain.

The methodology for assessment of expected value of incremental future earnings is developed to be utilized in parallel with similar methodologies covering other relevant societal and environmental impacts. Implementation of assessment of expected value of incremental future earnings in parallel with methodologies for the evaluation of financial, natural and social capital was tested within the 4-dimensional profit and loss (4D P&L) accounting framework (AkzoNobel, 2015). When applied to the book value chain, the combined results of the four methodologies demonstrated to provide support the identification of improvement opportunities and facilitate effective communication and decision-making processes.

With this paper we intend to share our assessment methodology for the assessment of the expected value of incremental future earnings with the business community, so that it can be applied free of charge. More information on licensing and permissions is provided under 'Additional information'.

2 Expected value of incremental future earnings – assessment method

2.1 Concept and definition

The expected value of incremental future earnings, hereafter referred to as value of future earnings, represents the development of employees upon involvement in production, as allocable to a company or value chain link. The value of future earnings allocated to company or value chain link *i* is calculated as the multiplication of annual wage, fraction of wage development related to work, inflation corrected wage development and remaining years of employment:

$$Eq.1 \quad Future\ earnings_i = annual\ wage_i \times percentage\ of\ wage\ development\ related\ to\ work_i \times inflation\ corrected\ wage\ development_i \times remaining\ years\ of\ employment_i$$

The total value of future earnings throughout the product value chain may be calculated as the summation of the value of future earnings allocated to each of the *n* separate links of the value chain:

$$Eq.2 \qquad Future\ earnings = \sum_{i=1}^{n} future\ earnings_i$$

The components of future earning are further specified in Table 1.

Table 1 Items of expected value of incremental future earnings

Item	Definition
Annual wage	The annual gross wage of a specific employee or the average annual gross wage of employees in a company or industry (per country). This data may be retrieved from an employee's annual income statement or a company's financial reporting, or may be estimated based on generic statistical data. Where the assessment focuses on the product value chain, the following method is suggested to estimate the average gross wage related to production: $Average\ wage\ related\ to\ production = average\ annual\ wage\ in\ industry\ or\ value\ chain\ link \times average\ annual\ FTE\ (full\ time\ equivalent)\ dedicated\ to\ production$
Percentage of wage development related to work	The part of the (average) employee's knowledge and skill development considered to be related to his/her involvement in production. The remaining part of the knowledge and skill development is considered to be related to individual intelligence and ability to learn.
Inflation corrected wage development	The inflation corrected wage development may be calculated for a certain time period based on the annual wage earned in the first and last year and the annual inflation (per country) for each year of the respective period. Information on wages may be obtained for a company or per industry and country. Care must be taken when interpreting and utilizing aggregate data or data from different sources to prevent data mismatching. The average annual wage increase over *k* years can be calculated as: $Average\ annual\ wage\ development\ (\%) = (\frac{wage_{final}}{wage_{initial}})^{\frac{1}{k}} \times 100 - 100$ The relative inflation for year *x* can be derived from the inflation of the respective year and the inflation of the previous year: $Relative\ inflation_x\ (\%) = inflation_{x-1} + inflation_{x-1} \times inflation_x$ Where *x-1* represents the previous year. The inflation in the year previous to the timeframe under investigation is assumed to provide the baseline, and hence must be set to 100%. The average annual inflation over *k* years can be calculated as: $Average\ annual\ inflation\ (\%) = (\frac{relative\ inflation_{final}}{relative\ inflation_{initial}})^{\frac{1}{k}} \times 100 - 100$ The inflation corrected wage development is subsequently derived as: $Average\ annual\ wage\ development,\ inflation\ corrected\ (\%) = average\ annual\ wage\ development - average\ annual\ inflation$

Remaining years of employment	This item can be calculated as the average retirement age less the average age of employees (using industry and country specific data). However, depending on how statistical data are compiled, it may be difficult to collect mutually comparable data. Therefore, the remaining years of employment may be estimated.

2.2 Assessment of future earnings for an individual employee

The value of future earnings can be calculated for an individual employee based on his/her actual wage development and can be related to the employee's activity within a company, an educational program, internship, etc. Here we will illustrate the assessment of future earnings with the example of fictional employee Joe.

Joe enters Company X at with entry-level job, with a gross annual wage of €15,000,-. As Joe gains experience, he gradually takes on more responsibilities within the company. He is rewarded accordingly by means of steady annual wage increases. After 3 years, Joe is appointed to a position carrying higher salary scale, and after 7 years, he gets promoted to a manager's position. By this time, his annual starter's wage has been doubled. Due to high inflation rates, Joe's overall annual wage development is negative in the 9th year his career at Company X. The following year, Joe decides to quit his job at Company X and continue his career elsewhere. He is assumed to be employed for 32 more years. The percentage of wage development related to the work Joe has done at Company X is assumed to be 75%.

The wage development of Joe throughout his career at Company X is specified in table 2. The value of future earnings as allocable to Joe's work at Company X is calculated retrospectively as the difference between Joe's final and initial inflation corrected annual wage, multiplied by the percentage of wage development related to his work at Company X and remaining years of employment:

$$\begin{aligned} Future\ earnings = {} & \left(wage_{final} - wage_{initial}\right) \\ & \times fraction\ of\ wage\ development\ related\ to\ work \\ & \times remaining\ years\ of\ employment \end{aligned} \quad \begin{aligned} = {} & (31{,}241 - 15{,}000)\ € \cdot y^{-1} \\ & \times 75\% \\ & \times 32\text{y} \end{aligned} \quad = € 389{,}784{,}-$$

The incremental character of the expected value of Joe's future earnings is demonstrated in figure 1, which represents each annual wage increase (or decrease) as a 'layer' added to the Joe's incremental earnings based on his initial wage. From the moment Joe decides to leave Company X (*t*=10*)*, the expected value of his incremental future earnings is represented by the accumulated wage increases multiplied by the remaining years of employment. A distinction is made between the value of future earnings allocable to Joe's work at Company X and to his personal efforts (further education, courses, etc.).

Table 2 Employee Joe's inflation corrected wage development over the course of a decade of employment at Company X.

Years of employment	Annual wage	Inflation corrected wage development
1	€ 15,000	-
2	€ 16,200	8%
3	€ 17,496	8%
4	€ 21,870	25%
5	€ 22,964	5%

6	€ 25,030	9%
7	€ 25,781	3%
8	€ 30,937	20%
9	€ 30,628	-1%
10	€ 31,241	2%

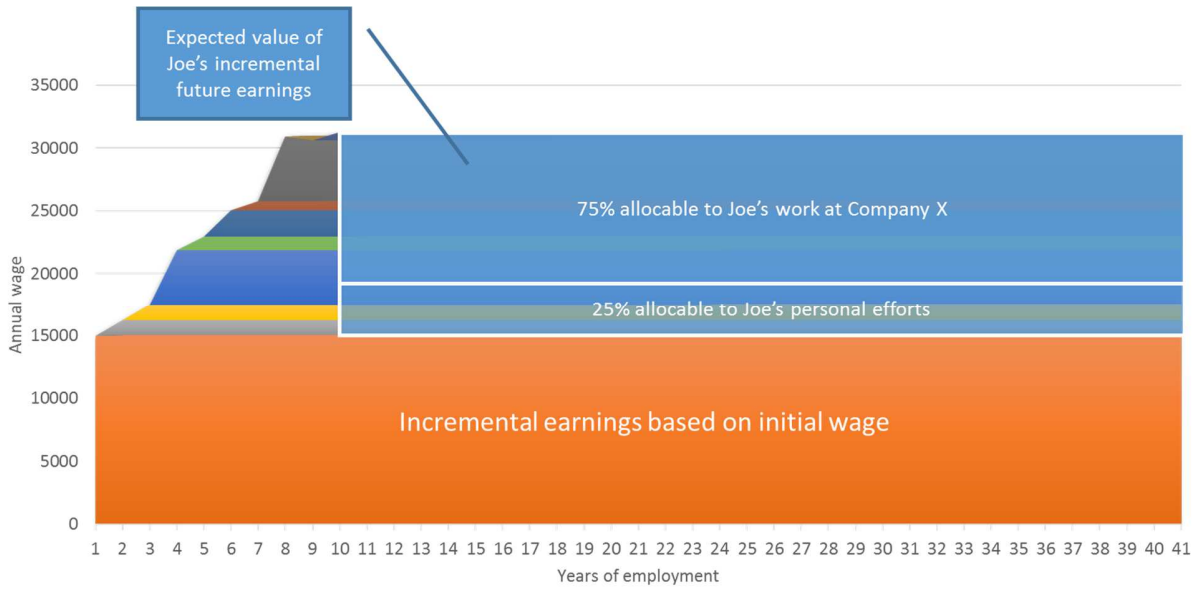

Figure 1 The expected value of incremental future earnings of employee Joe after ten years of employment at Company X.

2.3 Assessment of future earnings at company level and throughout the product value chain

The average value of future earnings of employee's may be calculated at company level, based on company data or generic data for the respective industry. Further, the value of future earnings may be calculated for one or more links of a product value chain, based on average wage data for the relevant industries.

2.4 Assessment of future earnings in parallel with other assessment methodologies

The methodology for assessment of future earnings is developed to be utilized in parallel with similar methodologies covering other relevant societal and environmental impacts. The methodology is especially compatible with financial capital assessment (Ecomatters, 2016), as financial capital includes the 'gross compensation of employees', here referred to as annual wage. Hence, data collected in the context of financial capital assessment can easily be re-utilized to further assess future earnings. Combination of the two methodologies not only provides insight into the financial capital created along the product value chain, but also into the development of employees upon involvement in production.

3 Conclusions

We have demonstrated how the development of employees upon involvement in production can be represented by the expected value of their incremental future earnings. Since companies are increasingly challenged to identify and communicate their societal contribution, we expect that the communication of the expected value of incremental future earnings in financial reporting will bring great value to businesses and will eventually become mainstream. Further, we have shown how the expected value of their incremental future earnings can be calculated for an individual employee, for the average employee of a company or for employees active in (links of) the product value chain.

Importantly, the Ecomatters methodology for assessment of the expected value of incremental future earnings was developed to be utilized in parallel with similar methodologies covering other relevant societal and environmental impacts. The combined results can support the identification of improvement opportunities, facilitate effective communication, and decision making processes.

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Additional information

This methodology is online available at: http://www.ecomatters.nl/expected-value-of-incremental-future-earnings

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