



LCA and Natural Capital Accounting (NCA) in product design –

THE BUSINESS CASE

Questions and Answers

The following are questions and the corresponding answers from the joint TRUCOST and thinkstep webinar titled “LCA and Natural Capital Accounting (NCA) in product design – THE BUSINESS CASE” which took place on May 7th 2015. The questions are in no particular order.

Methodology / Calculation related questions

Q: What is it?

A: Natural capital valuations are financial values applied to absolute impacts that reflect the full costs to society that a company is responsible for. Companies pay fees for the energy and water they consume and the waste they dispose of, but natural and social capital costs reflect the true impact of these and other impacts that are currently externalized by the company. Businesses rely on natural and social capital to produce goods and deliver services. They depend on natural non-renewable resources (fossil fuels and minerals) as well as natural renewable ecosystem goods and services (freshwater and pollination). Businesses also rely on the environment for its ability to absorb by-products of production such as pollution and waste. This ability is finite and has already shown its limits, as with climate change caused by GHG emissions. Businesses also depend on manufactured inputs from their suppliers and human resources. Monetary valuation tools translate environmental and social values into the dominant language of business and economics. They convert impacts and dependencies into costs and benefits expressed in monetary terms. By making trade-offs and synergies visible, and giving an overall indication of value creation or destruction to different stakeholders, valuation allows alternative practices to be assessed and compared in an integrated and systematic way. It enables the benefits of sustainable practices to be communicated in an easy-to-understand language.

Q: What is the basis for assigning a dollar of cost and value to a natural capital use? I'm struck by the total natural capital cost you assign to t shirt manufacture in Bangladesh, which is much higher than the actual costs today for manufacturers there.

A: Natural capital accounting internalizes external costs. These are currently not covered by actual costs but which may be of relevance in the future. Therefore these costs may be higher than the actual costs. Natural capital costs can include a large part of company’s cost base, revenue and value added. In a research that TRUCOST did for Greenbiz (published in the State of Green Business Report 2015 <http://www.greenbiz.com/report/state-green-business-report-2015>), TRUCOST finds that the profit at risk from natural capital impacts is between 100 and 150%.

Q: What method is used to calculate the monetary value of NC? I assume either willingness to accept, willingness to pay, or cost of alternate service provision? How do you establish unit prices for GHG and other "emissions"?

A: TRUCOST uses several methodologies from the field of environmental and ecological economics. The choice in valuation technique depends on data availability and on the impact under consideration, as some techniques are more suited than others to value certain aspects. For example, willingness-to-pay techniques are used to value health costs, as they encompass pain and inconvenience caused on top of health care costs. Hedonic pricing, where the change in property prices is correlated with a change in ecosystem condition, is used to value the cultural and visual impact of eutrophication. More details can be found in the methodology documents (please find [link here](#)).



Q: Where does the data in the TRUCOST NCA database come from?

A: TRUCOST has been building its database for several years. Methodologies are updated when new methodological developments in the field become available. TRUCOST’s team of environmental economists build these coefficients. They are reviewed by different stakeholders – in particular by TRUCOST’s advisory board.

Q: You introduced the concept of "ecosystem services" but it is not clear if you are assessing the direct and indirect provision of ecosystems services

A: Natural Capital assessment global coefficients are assessing the impact of the emission of different substances and the use of resources such as water. These can have an impact on ecosystem services. This means that effects are indirectly included, but not directly assessed.

Q: How is ecosystem and biodiversity included?

Ecosystem services are included indirectly through several drivers which have an impact on biodiversity and ecosystems: Water depletion effect, Eutrophication effect, Agricultural and Urban land occupation, Natural land transformation and Freshwater, terrestrial and marine toxicity.

Q: Does GaBi also support NCA in terms of: energy KWH, liters water

As a first step NCA global coefficients are implemented. TRUCOST has more detailed information which focussing on single LCI parameters (more regionalised LCIs). This is potentially coming later this year. Currently, NCA global coefficients is an additional weighting method, applied to impact categories. They can thus be applied to any GaBi balance available (and accordingly also to single processes and datasets etc.).

Q: Is human health and welfare included?

Impacts on human health entail higher insurance premiums and higher spending on medicine so there is, apart from lost life time, a positive economic effect, too. Is that factored in?

A: This impact on human health are assessed as a negative impact, due to the increased health cost, increased medicine use and cost, reduction of quality of life and lost lifetime. The higher insurance premiums are not included within the scope.

Q: Can you please comment on / estimate the confidence intervals or in general, the "uncertainty"?

A: Limitations include excluding some impact categories on the basis of materiality or data availability, and the use of benefit transfer techniques instead of primary, on-the-field studies. In any case, we should not let "perfect" be the enemy of good. Natural capital valuation provides a good first estimate of the level of magnitude of different impacts. TRUCOST always provides a list of detailed limitations, and where suitable sensitivity analysis.

Q: Is there the plan to express impacts regarding the "social sustainability" also in monetary values?

A: At the moment, only natural capital externalities are evaluated – although impacts on human health could be considered as impacts on human capital. TRUCOST has conducted full integrated assessments looking at natural, human, social and financial capital impacts with a few companies, in partnership with GIST Advisory (<http://gistadvisory.com/>) . Please get in touch with TRUCOST if this is of interest.

Q: Which threshold NCA is "sustainable"?

A: It depends on your definition of "sustainable". Once you have decided what it means for your company, then this type of analysis can help you. "Sustainable" could be "net positive" for example, that is creating value for society.



Sector specific questions

Q: Do you have a lot of data for the mining sector, with development of different ore types in various regions? What about Canadian data with respect to the impacts and scarcity calculations?

A: Different Data for mining in Canada is available in GaBi LCA databases. Additionally, other primary LCI data representing mining in Canada can be used for a gate-to-gate GaBi LCA model. Primary data is site and region specific. Both options can be analysed with the NCA method.

Natural Capital Accounting global coefficients in GaBi are global at the moment. If you want country-specific coefficients, please get in touch. TRUCOST’s scarcity calculations do not apply to ore resources – but TRUCOST is investigating ways of incorporating this. TRUCOST would be happy to co-develop this with you, if interested.

Regionalisation questions

Q: How can you regionalize results for NCA when datasets in Gabi are not regionalized?

A: Currently fully regionalized inventory data in GaBi is only available for electricity and therefore regionalized Natural Capital Assessment is not yet fully possible. Starting from June, regional data for the LCI for the water scarcity method will be available. Furthermore, GaBi development will include further regionalization and focus will be on inventory level in the near future.

TRUCOST’s valuation coefficients in GaBi are global at the moment. Country-specific coefficients are already available upon request.

Q: Do you have specific LCA and NCA data for Brazil?

A: More than 100 specific Brazilian LCA datasets are available in GaBi professional and extension DBs and as data on demand (please search your processes [here](#) or get in touch if you are missing on a dataset: content@thinkstep.com)

NCA data for Brazil are available, but they are not in GaBi at the moment. Please get in touch if you want more details on what is available. These two projects, led by TRUCOST, may be of interest: The Natural Capital Risk Exposure of the Financial Sector in Brazil (<http://www.TRUCOST.com/published-research/152/GIZ-Natural-Capital-Risk-Exposure-of-the-Financial-Sector-in-Brazil-Full-Report>) and TEEB for Business Brazil (<http://www.TRUCOST.com/published-research/127/TEEB-Brazil-natural-capital-report>).

Q: How do you treat regionalisation and temporal issues?

A: TRUCOST’s valuation coefficients in GaBi are global at the moment. If you want country-specific coefficients, please get in touch with us.

TRUCOST has developed valuation coefficients for 150+ countries by taking into account background ecological and socio-economic conditions. For example, TRUCOST’s water valuation takes into account local water scarcity as well as access to water and ecosystem’s vulnerability to water depletion. When impacts and related costs are spread out through time, a discount rate needs to be applied. This is particularly true in the case of climate change – TRUCOST relies on the US EPA estimates for this metric.

Q: Are there values different for electricity generated in Poland compared to Germany and France?

A: Yes. LCA results and accordingly NCA results are different. This analysis would be one example what you can do with GaBi and integrated global NCA coefficients from TRUCOST.



Q: If NCA is site-specific: How are suppliers treated?

A: LCA can be site specific. This depends on the data availability and quality. NCA is can be assessed accordingly. Suppliers are treated as for any other part of an LCA.

Transparency / Standardisation / 3rd parties

Q: What are the key initiatives in this field?

A: Monetary valuation of ecosystems increased in the 1990s as a growing number of natural scientists recognized the pragmatic usefulness for decision makers of framing ecological concerns in economic terms (Gomez-Baggethun, et al., 2010). A particular milestone in the mainstreaming of the approach was the paper by Costanza et al. (1997), constituting the first attempt to value global ecosystem goods and services. This study estimated the entire biosphere to be worth an average of \$ 33 trillion per year, or almost double the global gross national product at the time.

The direct theoretical grounds for this, however, stem from much earlier in the 1960s when the general notion that natural resources, lacking well-defined property rights, were vulnerable to overexploitation, which was famously articulated in Hardin’s Tragedy of the Commons (1968). Due to the compatibility with existing economic structures, monetary valuation approaches are increasingly used around the world in decision-making and in facilitating policy formulation.

Some of the leading examples of pioneering international ecosystem services studies since 2000 include the Millennium Ecosystem Assessment (MEA) of the state of the globe’s ecosystems, and The Economics of Ecosystems and Biodiversity (TEEB). MEA concluded that the rapidly growing resource needs have resulted in substantial and largely irreversible losses that unless addressed, are likely to substantially diminish the benefits flowing from ecosystems (MEA, 2005).

Their emphasis on the need for economic incentives to correct environmental degradation was further developed by TEEB, which aims to estimate the monetary value of this decline and provide a framework for action by articulating, amongst other things, the benefits of valuation for achieving resource efficiency. The potential benefit of mainstreaming environmental and social value into business decision-making is continuing to resonate with governments and businesses alike.

Another initiative that is gaining traction within the private sector, and being developed by the Natural Capital Coalition with support from the International Finance Corporation, the International Union for Conservation of Nature and The World Bank, is the Natural Capital Protocol (Natural Capital Coalition, 2014). The objective is to create a harmonized accounting framework, providing businesses with standardized tools and metrics to identify their impact and dependency on natural capital. As stated by the Natural Capital Coalition, ‘one of the challenges in scaling uptake in business is the lack of a harmonized approach to enable natural capital valuation to be used practically in these applications, for example in internal management, reporting and disclosure’ (Natural Capital Coalition, 2014).

Q: To what extent are the valuations of different environmental impacts transparent and standardized?

A: A methodology document will be provided with key sources, methodological process and limitations by 2015-05-30 (available [here](#)).



Natural capital valuation methods are not as standardised as LCA methods for example, but there are key guides and initiatives in the field striving towards this, for example the CEV guide from the WBCSD (<http://www.wbcso.org/work-program/ecosystems/cev.aspx>), TEEB reports (<http://www.teebweb.org/>) and the Natural Capital Protocol (<http://www.naturalcapitalcoalition.org/natural-capital-protocol.html>).

Q: How long until the Coalition comes up with a standard and how long until we can expect an ISO standard?

A: The National Capital Coalition is not going to come up with an ISO standard – but rather a Protocol outlining key analysis steps, considerations and methodological choices when conducting a natural capital assessment – similar to the Greenhouse Gas Protocol for example. The 2 sector guides, Apparel and Food and Beverage, will translate these principles to particular sectors and give specific examples. Businesses will be pilot testing the Protocol this summer. If you would like to get involved, please get in touch. The final deliverables are expected in 2016.

Q: Do you know the project EXIOPOL and the Exiobase Database? This is a global Input-Output framework.

A: This is one of the many sources that TRUCOST has reviewed when building up the methodologies.

Q: How is TRUCOST related to <https://www.naturalcapitalcommittee.org/> or <http://www.naturalcapitalcoalition.org/> and the <http://ec.europa.eu/environment/biodiversity/business/assets/pdf/b-at-b-platform-nca-workstream-final-report.pdf> ?

A: TRUCOST is leading the development of the sector guides as part of the Natural Capital Protocol.

Who else is using this? How can I buy it?

Q: How do you get the NCA layer in GaBi?

A: You request the NCA global coefficients from thinkstep and integrate it to GaBi easily

Subscription license
 First license: 450€ annually
 Additional license: 225€ annually

Perpetual license
 First license: 900€ plus 25% annual maintenance
 Additional license: 450€ plus 25% annual maintenance

Q: Are the NCA project costs (approx. 5K) include developing a LCA?

A: The offer named “NCA Insights” is an offer for you that have a LCA or EPD model created in GaBi already. If the model is not built on the basis of the latest version of GaBi databases 2014 additional cost can arise from converting this LCA model to the GaBi databases 2014 level.

Also the ‘NCA Insight’ does not include the development of the LCA or EPD model. It is a first step towards gaining some understanding what a NCA result could look like by having applied the global NCA coefficients to the LCIA results calculated from your existing LCA or EPD model.

A fully-fledged NCA project is also resulting in definitely higher cost then indicated for a ‘NCA Insight’ exercise.

Q: How can NCA be applied in LCA? Are there references available?





A: By adding the NCA dataset into GaBi.
 You can also get in touch with us directly for a tailored application (including regionalization).
 The first LCA valuation was conducted by Interface with TRUCOST 2 years ago:
<http://www.TRUCOST.com/published-research/131/interface/lca>

Q: Is there a documentation available?

Documentation will be made available through thinkstep website by 2015-05-30 and available [here](#)

Q: Which corporation’s stakeholders are interested in NCA results?

A: The methodology is also a first step towards assessing risk – as such, this information can be useful for the C-level, risk and finance team to think about these issues. It can also help the procurement team to do better sourcing decisions. The marketing and communication team can use the data to communicate to its current and potential customers and for sustainability reports. Sustainability departments can enlarge the scope of analysis. Investors, government and NGOs may also be interested in this type of data, as it shows a greater transparency and integration of environmental issues with other business metrics.

Q: If it is as a GaBi databased, can it also be used in UMBERTO?

A: The TRUCOST NCA functionality is exclusively available for GaBi Users.

Categories / Indicators

Q: Which impact categories are included? Which indicators are used?

A: List of LCIA methods covered:

- CML 2013 EU25+3
- Traci 2.1, US-CA 2008
- PEF recommendation
- ReCiPe 1.08 (H)