

Re-casting The Triple Bottom Line

Calculating Social and Ecological Footprints

A Working Proposal Prepared by
Center for Sustainable Innovation

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Foreword

- What are we talking about?
 - What's the best way for a Corporate Sustainability Management (CSM) function to measure and report on its non-financial, multi-bottom line impacts?
 - What does 'sustainability' mean to CSM, and how can we measure and report it in practical ways?
 - Is the Triple Bottom Line (TBL) framework appropriate for use as a basis for CSM?
 - How can we resolve the confusion surrounding the TBL insofar as its relationship with financial 'bottom line' reporting and other aspects of the discipline are concerned (e.g., Corporate Social Responsibility, Business Ethics, etc.)?
- About this document:
 - Starts with theory, but is intended to end with practice-oriented ideas for CSM
 - Is a perpetual draft, a working document (version number always changing as new insights occur and progress is made)
 - Is intended to draw comments and feedback, so please contact us with your ideas (e-mail Mark W. McElroy at mmcelroy@vermontel.net)

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Introduction

- The “Triple Bottom Line” (TBL) is an organizing principle for sustainability measurement and reporting originally developed by John Elkington and his London-based organization, *SustainAbility*
- Many attempts have been made to separately develop practical accounting tools for each of the three ‘bottom lines’, but:
 - No standardized approaches for any of them have yet been adopted
 - And no combined approach that would integrate measures from all three bottom lines into a unified value, or score, have yet been developed, either
- We agree with the ontological commitment implied by the TBL, but we see economic capital as merely a form of social capital – thus, there are really only two fundamental bottom lines of interest to CSM, not three
- We take inspiration, as well, from efforts underway on the ecological side of the analysis to measure and express sustainability in true bottom-line ways:
 - Such as the Ecological Footprint tool (www.footprintnetwork.org)
 - And as formulated by Herman Daly in his 3-part definition of sustainability

Introduction (cont.)

- Before sharing our ideas for re-casting the TBL and taking it one step closer to a practical form, here are some key premises we relied on:
 - The TBL corresponds to three types of capital: ecological, social, and economic.
 - Economic capital is actually a type of social capital, so there are really only two fundamental forms of capital involved in TBL: ecological and social.
 - Sustainability, the concept, entails dyadic operators¹: two things dynamically interacting with one another, with one playing the role of producer/supplier and the other consumer/user. The consumer/user can either operate within the limits of resources provided by the producer/supplier, or it can match or exceed them. If it exceeds them, its behavior is unsustainable relative to the capability, or 'carrying capacity', of the producer/supplier to support them.
 - Importantly, consumer/users can also cultivate and grow capital, not just use it!
 - This fundamental description of sustainability can be applied to the non-material world of social capital, not just the material world of physical objects and the ecology; that is what we explore on the pages that follow.
 - Because of the duality of consumer/users and producer/suppliers, measures of sustainability are best expressed as 'quotients' ('A divided by B').

1. See http://www.sustainableinnovation.org/Concept_of_Sustainability.pdf

What Is 'Sustainability'?

- World Commission on Environment and Development (WCED) definition:

A sustainable society is one that “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- Discussion:
 - Also known as the Brundtland Commission – final report published in 1987
 - Focus is on a goal state or *end*, not on processes or *means*
 - Leaves open the question of how to achieve the outcome states of interest
 - Does not, in particular, explicitly address resource consumption issues, much less the important distinction between renewable resources and non-renewal resources
 - Doesn't really answer the question of what sustainability means for these reasons, and also leaves it to our imagination to determine which “needs” are legitimate and which ones aren't

Our Preferred Definition

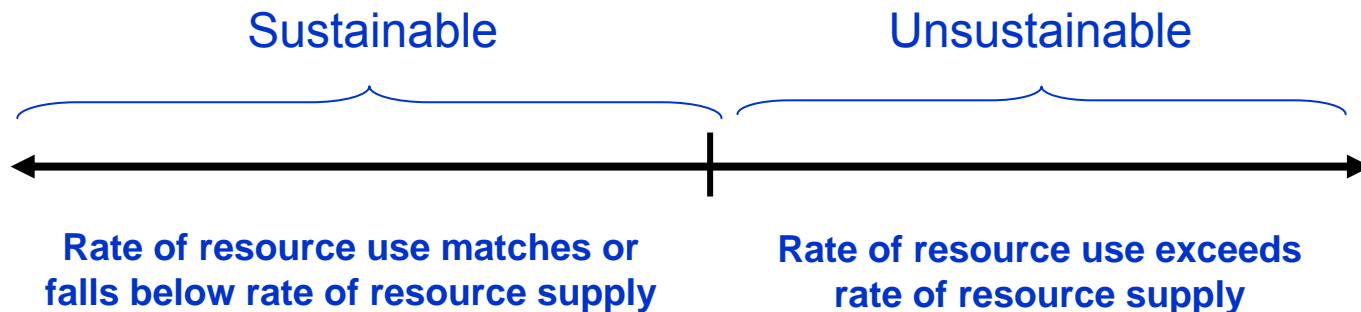
- Based on Herman Daly's work
- Arises from three questions:
 - Is it possible for the rate of human use of renewable resources to exceed the rate at which such resources are renewed or replenished?
 - Is it possible for the rate of human use of non-renewable resources to exceed the rate at which replacements for such resources are developed or made available?
 - Is it possible for the rate of waste production by humans to exceed the rate at which the environment can assimilate such wastes?
- To the extent that the answer to these questions can be yes, we can say that when such rates are in conflict (i.e., rate of use exceeds rate of supply), the behaviors associated with them are unsustainable
- That is the definition of sustainability I have relied on in this presentation
- It is the 'theory' that sets up the question and discussion of what our 'practice' should be in measuring the sustainability of human behaviors
- It is the springboard for our discussion of measuring and reporting on corporate sustainability, too – *we must have a sound theoretical foundation!*

Some Comments on Our Theory

- Stated in declarative form, a society (or organization) is sustainable if and only if:
 1. Its rate of use of renewable resources does not exceed the rate at which such resources are produced and/or replenished;
 2. Its rate of use of non-renewal resources does not exceed the rate at which alternative substitutes are developed;
 3. Its rate of waste emissions into the environment does not exceed the rate at which such wastes can be assimilated by the environment.
- Note the following:
 - All of this deals at least implicitly with ecological sustainability; questions of social, economic, or other contexts are left out.
 - Sustainability, in the ecological sense at least, is arguably a binary proposition: a behavior is either sustainable or it is not
 - When comparing one rate against another, the first rate either exceeds the second rate or it matches or falls below it
 - In the first case, the behavior is unsustainable; in the second it is sustainable
 - There is no “more” or “less” sustainable in this conception of things

Some Comments (cont.)

- Faber et al in “The Sustainability of ‘Sustainability’ ” suggest that views on the dynamics of sustainability between an artifact and the environment can either be:
 - Static
 - Dynamic
- Our perspective suggests a third possibility....*binary*....although I admit that the demarcation point between sustainable and unsustainable is a moving target, since the behaviors of the systems involved are always in motion

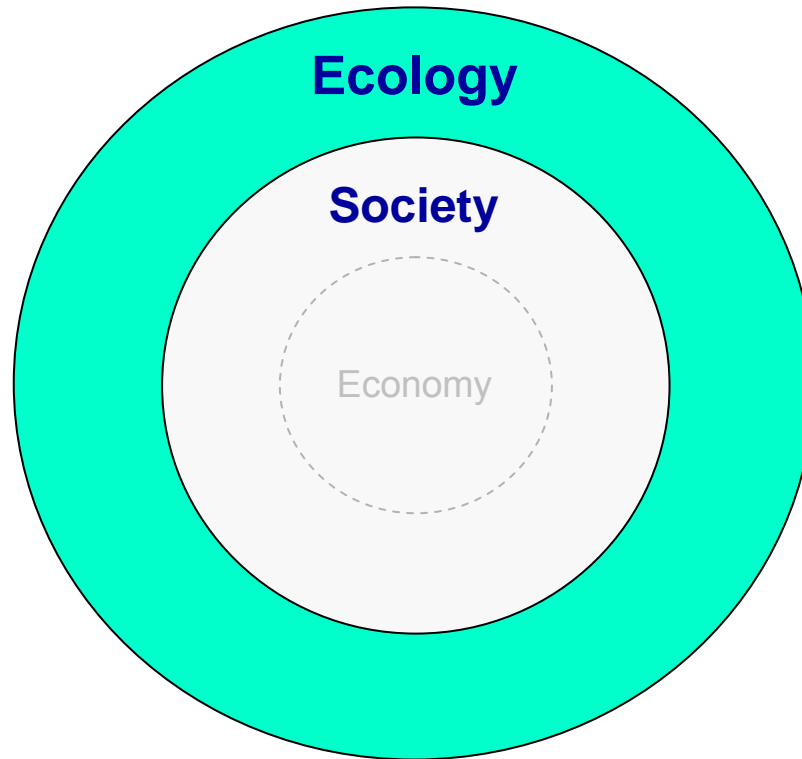


What We Propose

Nested Subsystems¹

Two basic forms of non-financial capital:

- Ecological
- Social



Note, also, that *not* shown are two other forms of capital nested within, and/or produced by, specific types of social capital that organizations can have impact on:

- Human (personal)
- Constructed

Because the types of capital of interest to us are nested systems in the real world, the measurement scheme we use for the TBL should be structured accordingly

1. Based on R. Levett's 'Russian Dolls' model, 1998, Journal of the Royal Statistical Society, A 161

The Measures We Propose: Quotients

Ecological Bottom Line

$$\frac{\text{Total Ecological Footprint}}{\text{Own Fair Share of Supply of Natural Capital}} = \text{Ecological Quotient (EQ)}$$

- The lower the better
- EQ ≤ 1 is sustainable
- EQ > 1 is unsustainable

Social Bottom Line

$$\frac{\text{Total Social Footprint}}{\text{Own Fair Share of Supply Gap in Social Capital}} = \text{Societal Quotient (SQ)}$$

- The higher the better
- SQ ≥ 1 is sustainable
- SQ < 1 is unsustainable

Economic Bottom Line

$$\frac{\text{Total Economic Footprint}}{\text{Own Fair Share of Supply Gap in Economic Capital}} = \text{Societal Economic Quotient (SEQ)}$$

- The higher the better
- SEQ ≥ 1 is sustainable
- SEQ < 1 is unsustainable

Modified Social Bottom Line*

$$\text{Societal Quotient} \times \text{EQ} = \text{Modified Societal Quotient (MSQ), aka the Triple Bottom Line}$$

- The lower the better

***In the Modified Social Bottom Line, we modify the score received for social capital to reflect an organization's ecological performance, because society is a dependent subsystem of the ecology – this results in a true *Triple Bottom Line* blended score!**

The Ecological Bottom Line

The Ecological Bottom Line

$$\frac{\text{Total Ecological Footprint}}{\text{Own Fair Share of Supply of Natural Capital}} = \text{Ecological Quotient (EQ)}$$

- The numerator reflects a organization's rate of natural services/resource use, such as the Ecological Footprint's notion of ecologically productive land (in global hectares) used per annum by a collective
- The denominator reflects an organization's fair share of the rate of natural services/resource production and/or renewal in the ecology, also expressible in terms of global hectares per annum
- Quotients less than or equal to (\leq) 1 are sustainable because usage rates either match or fall below production and/or renewal rates
- Quotients greater than ($>$) 1 are unsustainable because usage rates exceed the production and/or renewal rates of natural resources, thereby diminishing stocks of natural capital (and their services) over time

The Social Bottom Line

Social Capital
A Reference Model

Eleven (11) Areas of Social Capital

Family Community Polity Economy Justice Security Health Learning Religion Journalism The Arts

Four (4) Dimensions of Social Capital

Networks

Knowledge

Rules

Norms

Capabilities

(i.e., the appropriate functions of social capital we value, and which facilitate collective action.)

M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I
M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I
M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I
M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I
M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I	M/I

M/I = Metrics/Indicators

The Social Bottom Line

$$\frac{\text{Total Social Footprint}}{\text{Own Fair Share of Supply Gap in Social Capital}} = \text{Societal Quotient (SQ)}$$

- The denominator reflects the presence and value of gaps in society for services or “Capabilities” available in the form of social capital to fully meet society’s needs for collective action
- The numerator reflects total organizational impacts, positive and negative, on gaps in the “Capabilities” available in the form of social capital, insofar as such impacts either help close related gaps or widen them
- Quotients greater than or equal to (\geq) 1 are sustainable because impacts meet or exceed an organization’s proportionate share of burden to help close gaps in “Capabilities” available in the form of social capital
- Quotients less than ($<$) 1 are unsustainable because impacts on social capital fail to meet an organization’s proportionate share of burden to help close gaps in “Capabilities” available in the form of social capital; impacts that directly or indirectly cause such gaps to widen are especially unsustainable because they lower society’s ability to meet its needs

Unpacking Our Reference Model

- The 4 Dimensions of Social Capital
 - *Networks* are cooperative configurations of people that facilitate collective action. They can either be designed in a top-down fashion, or emerge on their own bottom-up (in self organizing ways). Networks can be:
 - Horizontal
 - Vertical
 - Made up of diverse individuals (or not)
 - Populated with strong human capital (or not)
 - *Knowledge* consists of shared beliefs and/or claims that have survived our tests and evaluations for truthfulness, usefulness, etc.
 - *Rules* are prescriptive statements or guidelines that specify how action must be taken by one or more individuals in a social setting (may be formal or informal).
 - *Norms* are permissive statements or discretionary rules that specify how action may, or should, be taken by one or more individuals in a social setting (may be formal or informal). Norms can include:
 - Trustworthiness
 - Shared Values and Ethics
 - Information Sharing
 - Reciprocity
 - Transparency
 - Inclusiveness

Unpacking Our Model (cont.)

- The 11 Areas of Social Capital and How We Can Invest in Them
 - Family
 - Definition: Parents, children, and relatives.
 - Example(s): A nuclear family.
 - Sample Investments: “Family-friendly policies”: Defined as those employment-oriented social policies that facilitate the reconciliation of work and family life by fostering adequacy of family resources and child development, favor the parental choice about work and care, and promote gender equality in employment opportunities (from OECD).
 - Community
 - Definition: A population of interacting individuals living in a common area with shared goals and a desire for taking collective action.
 - Example(s): A neighborhood.
 - Sample Investments: “Social Service Leave”: A program at the Xerox corporation which allows employees to take a year off with full pay to work for a community nonprofit of their choice.
 - Polity
 - Definition: The political form of organization in use by a specific population.
 - Example(s): The U.S. federal government.
 - Sample Investments: Corporate political action committees (PACs).

Unpacking Our Model (cont.)

- The 11 Areas of Social Capital (cont.)
 - Economy
 - Definition: The structure of economic life in a country, area, or period.
 - Example(s): Global commerce.
 - Sample Investments: Job creation, payment of taxes, trade with suppliers, etc.
 - Justice
 - Definition: The maintenance or administration of what is just by the establishment or determination of rights according to the rules of law or equity.
 - Example(s): The federal court system in the U.S.
 - Sample Investments: Whistleblower programs and ombudsman functions.
 - Security
 - Definition: Freedom from danger, fear, or anxiety; provision of basic needs, including food, clothing, and shelter; protection against physical harm from others.
 - Example(s): Safe food, decent housing, provisions for retirement, military defense.
 - Sample Investments: Responsibly managed and adequate pension programs; social security in the U.S.; commitment to the use of organic ingredients by food producers.
 - Health
 - Definition: A state of physical and mental well-being.
 - Example(s): A community free of infectious diseases.
 - Sample Investments: Corporate foundations and grant programs aimed at improving public health.

Unpacking Our Model (cont.)

- The 11 Areas of Social Capital (cont.)
 - Learning
 - Definition: The process of closing epistemic gaps in response to the detection of problems or opportunities for which solutions are not readily available.
 - Example(s): School systems; innovation systems in business.
 - Sample Investments: Corporate foundations and grant programs aimed at improving public education; bottom-up innovation programs in business.
 - Religion
 - Definition: Sensitivity or attachment to spiritual or supernatural values.
 - Example(s): The Catholic Church; Deep Ecology.
 - Sample Investments: Diversity programs that include a focus on supporting religious diversity.
 - Journalism
 - The collection, editing and publishing of information of current interest or importance to individuals and society for presentation and delivery through news media (the press).
 - Example(s): National Public Radio, The New York Times, etc.
 - Sample Investments: Corporate sponsorship of specific investigative reports or documentaries.

Unpacking Our Model (cont.)

- The 11 Areas of Social Capital (cont.)
 - The Arts
 - Definition: The conscious use of skill and creative imagination in the production of aesthetic objects
 - Example(s): Music, painting, theater.
 - Sample Investments: Corporate foundations and grant programs aimed at supporting the Arts.

The Economic Bottom Line

The Economic Bottom Line

$$\frac{\text{Total Economic Footprint}}{\text{Own Fair Share of Supply Gap in Economic Capital}} = \text{Societal Economic Quotient (SEQ)}$$

- The denominator reflects the presence and value of gaps in society for services or “Capabilities” available in the form of *social economic capital* to fully meet society’s needs for collective action
- The numerator reflects total organizational impacts, positive and negative, on gaps in the “Capabilities” available in the form of *social economic capital*, insofar as such impacts either help close related gaps or widen them
- Quotients greater than or equal to (\geq) 1 are sustainable because impacts meet or exceed an organization’s proportionate share of burden to help close gaps in “Capabilities” available in the form of *social economic capital*
- Quotients less than ($<$) 1 are unsustainable because impacts on *social economic capital* fail to meet an organization’s proportionate share of burden to help close gaps in “Capabilities” available in the form of *social economic capital*; impacts that directly or indirectly cause such gaps to widen are especially unsustainable because they lower society’s ability to meet its needs

The Modified Social Bottom Line (i.e., the Triple Bottom Line)

The Modified Social Bottom Line

$$\text{Societal Quotient} \times \text{EQ} = \text{Modified Societal Quotient (MSQ)}$$

- In the Modified Social Bottom Line, strong ecological performance improves the social score; weak ecological performance diminishes it
- Why do this? Because society is a dependent subsystem of the ecology, not something separate from it – scores should be linked accordingly
- Also, since a “good” score in the Ecological Quotient (EQ) is a low one (the lower the better), multiplying the Societal Quotient by the EQ will lower the Societal Quotient; a “bad” score will raise it – so the lower the Modified Societal Quotient, the better.
- Finally, the Modified Social Bottom Line is arguably a good metric for a single Triple Bottom Line, since it reflects *both* an organization’s Ecological Bottom Line and its Social Bottom Line in one blended score!

Discussion

Discussion (1 of 5)

- Our approach has been to use the Ecological Footprint as a starting point, and to see if we could apply related principles to doing Social Footprints
- The Ecological Footprint (EF) is built on two key propositions:
 - Limited resources exist and must be shared
 - Any arrangement we make for sharing resources must be fair, just and equitable
- This accounts for the ‘fair earthshare’ concept in EF
- Thus, the EF focuses on closing gaps between, say, a person’s entitlement to a fair earthshare of ecological services and the share s/he actually takes
- Switching to social capital, we have an immediate difference to contend with:
 - Unlike ecological capital which humans do not create, social capital is created by people and can be grown virtually at will; while social capital resources, too, are arguably limited, we are not stuck with them as we are with ecological resources
- Thus, the gaps that must be closed in the case of social capital are not gaps between what we are entitled to and what we use; they are gaps between what we need and what we have decided to produce or make available

Discussion (2 of 5)

- In the case of the EF, if a person exceeds his or her fair earthshare, he or she really has only *one* course of action to rely on:
 - Lower his or her consumption! Increasing the size of the planet is not an option!
- In the case of social capital, though, if a person fails to supply his or her fair socialshare, he or she really has *two* courses of action to rely on:
 - Somehow cause a lowering of demand for social services or functions
 - Increase the supply of social services or functions required to meet demand
- The second option, in the case of social capital, arises from the fact that social capital is created by people (i.e., unlike ecological capital, which is not)
- Social capital, when compared to ecological capital, raises another key issue, too, that must be taken into account in the present context:
 - Social capital, unlike ecological capital, is not in abundant, much less sufficient, supply
 - Ecological capital, on the other hand, while threatened, is in abundant supply

Discussion (3 of 5)

- In the case of ecological capital, then, our problem is *not* that we don't have enough supply of resources to work with, it is that we have too much demand. So we focus on measuring demand and *lowering* it!
- In the case of social capital, however, our problem is *not* that we have too much demand to contend with, it is that we have too little supply! So we focus on measuring supply and *raising* it!
- So in the case of ecological capital, the problem boils down to closing demand gaps; for social capital, it boils down to closing supply gaps
- What this means, then, is that for purposes of Triple Bottom Line measurement and reporting:
 - The ecological bottom line must be tied to impacts organizations are having on closing demand gaps (which the *Ecological Footprint* does)
 - The social bottom line, by contrast, must be tied to impacts organizations are having on closing supply gaps (which our proposed *Social Footprint* does)
- Thus, an organization's fair *socialshare* is not its fair share of available limited resources, it is its fair share of resources not yet fully supplied

Discussion (4 of 5)

- Translation:
 - In the case of ecological capital, people have an obligation to constrain their demands, so that limited resources available for everyone will be sufficient
 - In the case of social capital, people have an obligation to contribute their supplies, again so that total resources available for everyone will be sufficient
- This is why in the quotients discussed earlier:
 - We focused on gaps between resource use and resource supply in the case of ecological capital, and
 - We focused on gaps between resource needs and resource production in the case of social capital
- So what do we mean by ‘sustainability’ in the Triple Bottom Line?
 - In the case of ecological capital, an organization’s behaviors are unsustainable if collective resource *consumption* exceeds collective resource *entitlements*
 - In the case of social capital, an organization’s behaviors are unsustainable if collective resource production falls below collective resource *obligations*
 - Our simple quotients provide us with a measurement basis for operationalizing these ideas in Corporate Sustainability Management settings

Discussion (5 of 5)

- Some comments here about the Global Reporting Initiative (GRI) are warranted:
 - While the GRI approach does an adequate job of focusing on the numerators in both social and ecological capital (and economic), it arguably fails to address the denominators in either case.
 - Thus, there are no gaps measured or reported in GRI.
 - And without gaps to work with, we can never really say whether our behaviors are sustainable – e.g., *sustainable relative to what?*
 - The best we can do with GRI data (and this is helpful, we agree) is to show the direction of impacts from one year to the next.
 - But even that may be misleading, because if the values of the denominators shift radically from one year to the next, what appears to be a step forward in the numerator could actually turn out to be a step backwards.

We think the overall approach we have proposed here is a very promising one, and we invite others to join us in helping to formalize it for widespread use

Calculating A Social Bottom Line (aka, a 'Social Footprint')

Calculating A Social Bottom Line

- A 5-step Process:
 1. Determine size of supply gap in social capital domain(s) of interest, and divide by total population of 'People Feet' in associated geography (i.e., to arrive at a per person share of what it would cost to create or supply missing social capital in a given geography); expressible in dollars per person or per 'People Feet'
 2. Calculate number of 'People Feet' associated with social entity or organization under analysis (headcount proportionate to time spent working in organization)
 3. Multiply the per person share of the supply gap calculated in Step 1 by the number of 'People Feet' in the organization of interest per Step 2. This is the social entity's or organization's 'Own Fair Share of Supply Gap in Social Capital' (i.e., the denominator in the Societal Quotient for the social capital domain(s) of interest); expressible in monetary terms
 4. Measure size of actual organizational contribution to closing supply gap in social capital domain(s) of interest. This is the entity's 'Total Social Footprint' (i.e., the numerator in the Societal Quotient); also expressible in monetary terms
 5. Divide the numerator by the denominator. This results in the Societal Quotient (SQ), which is the Social Bottom Line, or 'footprint', of a social entity or organization.

Calculating a Social Footprint

- Step 1 - Determine size of supply gap in social capital domain(s) of interest
 - The ‘social capital domain(s) of interest’ would be one or more of the 11 areas of social capital shown in our model
 - For illustrative purposes, let us consider a study performed in 1999-2001 at Humboldt State University in California, in which students there attempted to measure the state of social capital for a seven-county region known as the Klamath-Siskiyou region (<http://www.humboldt.edu/~envecon/Indicators/>)
 - Among the indicators of the status of social capital in the region were several that fit neatly into our framework, including:
 - Teen pregnancy rates in 2000 (fits into our ‘Health’ area of social capital, since the issue is how well society is equipped to meet the contraceptive needs of teenage girls in the region).
 - What the Humboldt study did was to identify and measure gaps in the social services or capabilities *needed* in the region, as well as the level of such services or capabilities that were *actually available* – thus, a supply gap was identified
 - Let us examine the example cited above further to see how it would be handled in our proposal for calculating Social Footprints

Calculating a Social Footprint

- Step 1 (cont.) -
 - *Teenage Pregnancy Rates*: Here is what the Humboldt study had to say about the shortfall of social services in place relative to teenage pregnancy rates:

How are we doing?

The teen pregnancy rate of the U.S. is the highest in the developed world. California is ranked 39th in the country for meeting the needs of teenage girls with contraceptive services. This is 32% of those in need. Oregon is slightly better, ranking 31st in the country, meeting the needs of 45% of the teenage girls. The best state in the country for meeting the contraceptive needs of teenage girls is Montana, which still provides for only 75% of those in need. In 1998, California's pregnancy rate for girls aged 15-19 was 159/1000. About 47% of these ended up in a live birth. In Oregon, the rate was 99/1000 girls, of which 54% were born. It is estimated that 80% of these were unplanned. Of the children born to teen mothers, 25% were their second child. On a more positive note, the rate hit its peak in 1987, and is now declining. In Humboldt County in 1998, there were 1496 children born. Of this number, 13% (190) were born to girls under the age of 20. In 1996, this number was 197 births to girls under the age of 20.

(cont.)

Calculating a Social Footprint

- Step 1 (cont.) -
 - The Humboldt study (cont.):

Why is this important?

High teen pregnancy rates reduce the ability for the mothers to further their education. This impacts human capital because their job skills will tend to be lower. They will usually work lower wage jobs, and many live in poverty for several years. Their children are less likely to receive adequate prenatal care, will be more likely to have a low birth weight, childhood health problems, and to be hospitalized during their childhood. This impacts constructed capital by increasing public spending on health care. Every \$1 spent on preventing teen pregnancy saves \$3 on public spending for prenatal and newborn health care. This impacts social capital, because people in poverty are concerned with meeting their own needs, and will not be likely to have time to spend on other people through civic activities and volunteerism. Teen pregnancy impacts natural capital for the same reason (meeting daily needs) because they will not have the time or money to choose to do things that are better for the environment. Their ability to plan for the future will be impaired. For all these reasons, teen pregnancy is a negative indicator for sustainability.

Calculating a Social Footprint

- Step 1 (cont.)
 - Looking at the California data alone, we see that the social services available to meet the contraceptive needs of teenage girls falls sixty-eight percent (68%) short of the need
 - Since no dollar figure was given for what it would cost to close this gap, let us use a hypothetical figure of \$5 million per year
 - Now let us assume that the geographical region addressed by the Humboldt study was populated with 500,000 people (that's 500,000 whole 'People Feet' according to our method)
 - Thus, if we were to equally divide the financial shortfall of what it takes to meet the contraceptive needs of teenage girls among all of the citizens of the Humboldt region, we would get a per person share of \$10; this is what it would take to close the social capital gap in Health (i.e., to meet the contraceptive needs of teenage girls in the Humboldt region) if everyone in the region made an equal contribution towards doing so

Calculating a Social Footprint (cont.)

- Step 2 - Calculate number of 'People Feet' associated with social entity or organization under analysis
 - This would be done for a specific organization involved in calculating its Social Footprint (let's call it 'XYZ Corporation')
 - The purpose of this step is to determine what an organization's proportionate share-basis should be for helping to close gaps in the supply of social capital
 - It is computed based on adjusted headcount
 - Let us assume XYZ Corporation has 10,000 employees who are all full-time
 - If each employee works 1920 hours per year, their total percentage of time in their lives they spend as employees of XYZ Corporation is roughly 22%
 - Twenty-two percent of 10,000 employees = 2200 'People Feet'

Calculating a Social Footprint (cont.)

- Step 3 – Multiply the per person share of the supply gap calculated in Step 1 by the number of ‘People Feet’ in the organization of interest determined in Step 2.
 - The per person share of the supply gap in Health services available for coping with teenage pregnancy rates in the region was \$10
 - The number of People Feet calculated in Step 2 was 2200, thus...

$$\text{\$10} \times \text{2200} = \text{\$22,000}$$

- This is XYZ Corporation’s ‘Own Fair Share of Supply Gap in Social Capital’ (i.e., the denominator in the Societal Quotient for Health-related social capital).
- Step 4 - Measure size of actual organizational contribution to closing supply gap in social capital domain(s) of interest.
 - This step calls for information about how much an organization is already doing or spending on helping to close the supply gap in the social capital domain(s) of interest (i.e., Health, in this case)
 - Let us assume that XYZ Corporation is already contributing \$25,000 a year to health care programs aimed at coping with teenage pregnancies
 - That, then, is XYZ Corporation’s ‘Total Social Footprint’ (i.e., the numerator in the Societal Quotient) in the social capital domain(s) of interest.

Calculating a Social Footprint (cont.)

- Step 5 - Divide the numerator by the denominator.

$$\text{\$25,000} \div \text{\$22,000} = 1.14$$

- This is XYZ Corporation’s Societal Quotient (SQ), which is its Social Bottom Line, or ‘Footprint’, for the Health category of social capital only.
- And if this were the only form of social capital, XYZ Corporation’s Societal Quotient would be “sustainable” (according to our method), because its score of 1.14 is equal to or greater than 1.0.
- Another way of saying this is that at an annual contribution level of \$25,000 for helping to cope with teenage pregnancy problems, XYZ Corporation is exceeding its own fair share of what it will take to close the overall supply gap in social capital based on its ‘People Feet’ size
- In response, XYZ Corp. could take the surplus scored on the Health front and shift it to making contributions in other areas of deficient social capital
- Or it could take the surplus and apply it to gaps found on the *ecological* front (i.e., gaps found in its Ecological Footprint)
- This, in turn, could enhance its overall *Triple Bottom Line* score per our method!

Social Footprints: Summary

- What's so interesting about the Social Footprint idea (to us, anyway) is the reversal in logic that it entails when compared to the Ecological Footprint
 - In the case of the Ecological Footprint, humans have no real ability to modify or increase supply, so the measurement and reporting solution focuses on patterns of *demand* and *lowering* them
 - In the case of the Social Footprint, humans are the source of supply, so the measurement and reporting solution focuses on patterns of *supply* and *raising* them
- This reversal is possible in the case of social capital because we *can* control supply – when social capital is low, we can just make more of it
- Controlling supply in the case of ecological capital, however, is arguably impossible – we are only one species in a vast ecological system
- Raising the supply of social capital is more than possible because it is a purely human artifact
- Increasing its supply is facilitated by the Social Footprint, in that the Footprint provides the reporting system needed to inform the public of how much additional social capital is required, and who owes how much of it

Social Footprints: Summary (cont.)

- Next comes the issue of a scale for the Social Footprint
- In the case of the Ecological Footprint (EF), a proxy metric for natural capital is used: “ecologically productive land” measured in hectares
- Ecologically productive land, in turn, is a composite metric that represents different land types:
 - Energy
 - Degraded
 - Garden
 - Crop
 - Pasture
 - Forest
- Turning to the Social Footprint, we can take a similar approach:
 - Family
 - Community
 - Polity
 - Economy
 - Justice
 - Security
 - Health
 - Learning
 - Religion
 - Journalism
 - The Arts

As long as building social capital can be measured in terms of investments required to create and maintain related functions, we can just use monetary units as proxies for social capital, as we did in our example

Revisiting “Sustainability”

Revisiting “Sustainability”

- We started out by defining sustainability and by noting the eco-centric nature of most definitions
- But now that we have addressed the specific meaning of social and economic capital (i.e., non-environmental forms of capital), is it possible for us to extend the 3-part definition of sustainability we proposed earlier – i.e., a human social system is sustainable if and only if:
 1. Its rate of use of renewable resources does not exceed the rate at which such resources are produced and/or replenished;
 2. Its rate of use of non-renewal resources does not exceed the rate at which alternative substitutes are developed;
 3. Its rate of waste emissions into the environment does not exceed the rate at which such wastes can be assimilated by the environment.
- This clearly needs to be re-cast in order to take social and economic impacts more fully into account
- What we need, then, is a second definition of sustainability that takes non-financial, non-ecological impacts into account

Revisiting “Sustainability” (cont.)

- So here’s what we propose....A human system is socially sustainable if and only if:
 - Its net impact on available social capital in society either meets or exceeds its just and equitable fair-share burden to contribute to the supply of society’s social capital needs.
- We need this second definition because:
 - Unlike ecological capital, we are dealing with a type of capital that humans can create
 - The ecological definition stresses impacts that either meet or fall below *supply*; the social definition calls for impacts that either meet or rise above *demand*
- Note that despite the differences between the two definitions we advocate, both comply with the goal state envisioned in the Brundtland definition of sustainability
 - Brundtland defined the end without specifying the means
 - We, in turn, have attempted to fill that gap!

- END -

Comments Most Welcome!

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