



TRUE VALUE ACCOUNTING for better Triple Bottom Line (TBL) Management

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2. CONTEXT This text is from a slideset that is a Work-in-Progress and may be updated. It is part of a series that aims to enable better metrics for the complex socio-enviro-economic system that we all live in. Metrics are powerful, but they must be the right metrics.

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1. INTRODUCTION AND CONTEXT

A COMPLEX SYSTEM

5. We live in a complex world, that has changed in a massive way over the past 300 years.
6. This has made it possible for people to have a better life in recent times than in the past ... longer life ... a higher standard of living ... a better quality of life.
7. It is widely recognized that mankind has been a 'toolmaker', and has been able to use 'tools' to become the dominant specie on earth. This was true in the stone age, and it remains true 15 thousand years later.
8. In the modern world, the tools that have been developed by mankind are extremely powerful, but they can be used for either good or ill. We now have the power to put an end to life as we know it. This is a very real existential threat that should not be ignored.
9. We live in a very complex multi-dimension system that comprises PEOPLE, everything that is MAN BUILT and everything that is NATURE. The idea of a SOCIO-ENVIRO-ECONOMIC SYSTEM is a shorthand for this idea.
10. The conventional perspectives about the economy and society are these:
 - Organizational performance, corporate profits and stock market prices
 - Macro economics at the country level, with some drill down to more local issues
11. These perspectives work for the owners of physical and financial assets, for investors in corporate organizations and corporate executives, as well as providing the political class with talking points. However, there are other perspectives that are essential to enable an efficient society and economy that optimizes for everything and has people as a top priority and planet at the center.

ACHIEVEMENTS OF CAPITALISM

13. Progress ... compared to the previous 3,000 years has been, by almost any measure, amazing over the past (say) 300 years. There has been amazing progress in man's ability to grow food, produce goods and build infrastructure. The free laissez faire market driven capitalist system has enabled a better quality of life for a whole lot of people over this time.
14. Capitalism was a powerful factor in enabling the agricultural revolution and the industrial revolution and improving quality of life and standard of living for many over a period of several hundred years.
15. The free market capitalist system has performed way better than state driven communist systems.
16. This system, however, has a performance that is quite dismal when compared to a theoretical best. The system works relatively well for owners, but less well for those who support themselves as part of the labor force, and the system ignores a surprisingly large part of the world's population who struggle in abject poverty.

17. Capitalism has evolved into a system that has an unhealthy focus on the ownership of financial wealth ... an unhealthy focus on 'me', with not much attention being paid to important issues outside financial wealth and things that are not traded for money.

AMAZING TECHNOLOGICAL PROGRESS

19. I worked on a mainframe computer in 1967 with 4K of memory. Almost 50 years later a smart phone has maybe 4G or 40G of memory, that is a million or 10 million times more. Only a tiny bit of the increase in the power of technology is being used to drive the decision making needed to make the complex global enviro-socio-economic system function nearer to its top potential. Why isn't the world a million times better than it was 50 years ago?

20. There is a lot of talk about the amazing power of modern information technology, but its real value emerges when it is combined with other elements or components that make up the world we live in.

21. Productivity is possible because knowledge is combined with process.

22. Products can be better because knowledge and process and materials are combined.

23. Process can be better because knowledge is applied to achieve more efficiency in the process so that there is better product while doing least damage to environment.

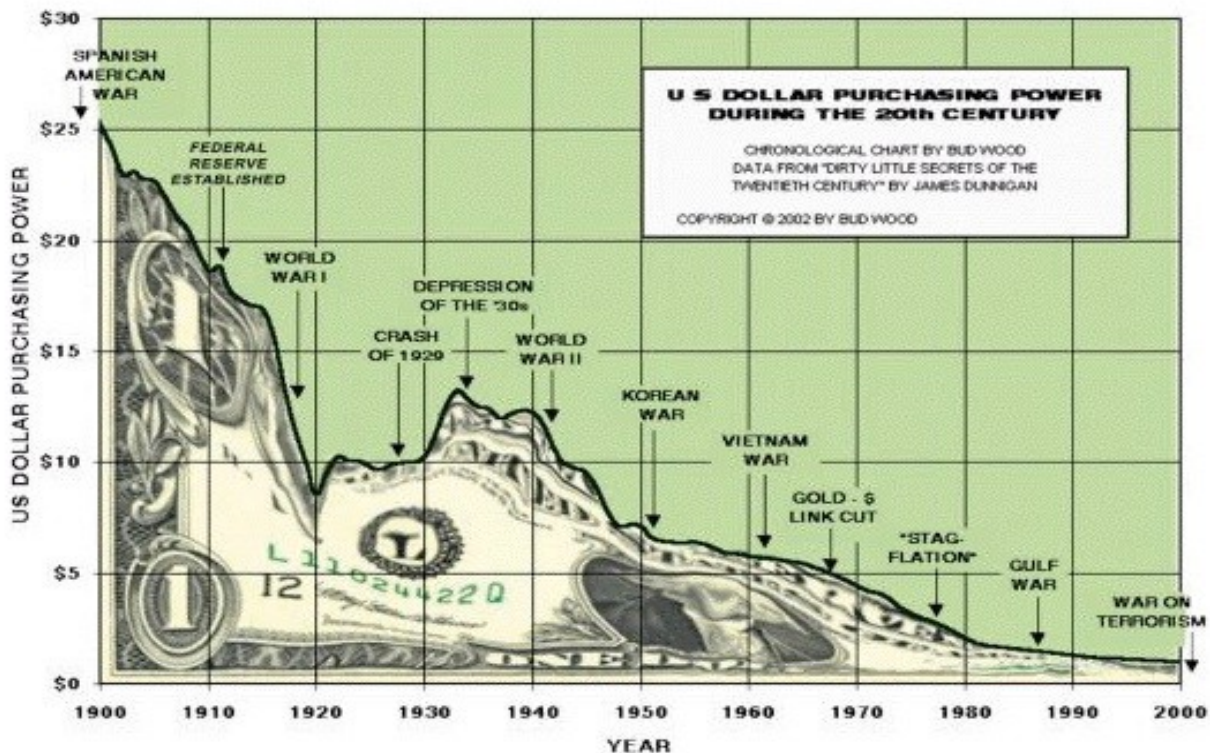
24. But all this goes wrong when knowledge is only applied to make more money wealth and everything to do with society / people and environment / planet is ignored.

MONEY AS A MEASURE

26. Money is at one and the same time an amount of financial capital and a measure ... a circular computation that has terrible implications. Money does not have a constant value, and the money associated with banks is no longer an efficient cost effective way of transacting.

27. Money may work well for the financial sector of the economy and the money profit performance of banks, but at the expense of the other components of the socio-enviro-economic system.

28. The US dollar may be the strongest money on the planet, but its history of value depletion over time is unbelievably bad ... look at this history of dollar value depletion during the 20th century ...



GDP (GROSS DOMESTIC PRODUCT) AS A MEASURE

31. Poor performance of the overall system has been aggravated by measures like Gross Domestic Product (GDP) at the macro level. GDP was introduced in the 1930s to help understand the Great Depression and subsequently the economic impact of war and post-war demobilization.

32. The weaknesses of GDP as an economic measure have been recognized for over fifty years. Kuznets himself ... the creator of the GDP measure in the USA argued for a better measure and Robert Kennedy described some of its weaknesses in a famous speech at the University of Kansas on March 18, 1968.

33. *"Too much and for too long, we seemed to have surrendered personal excellence and community values in the mere accumulation of material things. Our Gross National Product, now, is over \$800 billion dollars a year, but that Gross National Product - if we judge the United States of America by that - that Gross National Product counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. It counts napalm and counts nuclear warheads and armored cars for the police to fight the riots in our cities. It counts Whitman's rifle and Speck's knife, and the television programs which glorify violence in order to sell toys to our children. Yet the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile. And it can tell us everything about America except why we are proud that we are Americans."*

34. GDP only measures economic flows, but it is used as a proxy for the state of the economy, assuming in a very crude way that the more the GDP, the better the economy and the better for people. In reality, this correlation is very weak ... but paradoxically, the bigger the GDP the easier it is for the performance of business to look good. More there is of GDP growth, the easier it is to have corporate profit growth and higher stock prices.

TECHNOLOGY, PRODUCTIVITY, LABOR

36. Technology has enabled massive improvements in productivity over the past 50 years which has resulted in an abundance of product. At the same time improvements in productivity have reduced the need for labor. This has been good for owners but less good for workers.

37. The same technology that enabled production efficiency has also been an enabler of global logistics which has made it possible for business to outsource production to almost anywhere in the world to make more profit at least cost.

38. Technology enables a 'race to the bottom' in terms of labor costs ... meaning low wages, low benefits, sub-standard workplace conditions, etc.

39. There is little incentive for corporate organizations to use technology to enable oversight of the supply chain so that corporate social responsibility is a reality rather than merely being a part of the PR and white-washing needed for marketing.

SYSTEM DYSFUNCTION

41. Data about the last 50 years show there has been growing dysfunction in the systems that drive both the global economy and local society.

42. There has been amazing progress in knowledge, technology, and manufacturing productivity over the past 50 years ... with computational power millions of times more powerful, materials

much better, knowledge growing faster and faster, and more and more people having decent education.

43. But in spite of all of this, the state of society ... the state of the world ... is something of a shambles. Progress for some has been wonderful, but not for others. For too many people, there has been little progress towards a better quality of life in both rich and poor countries. For many people, opportunity is nothing more than a cruel mirage.

44. At the same time, there is dangerous depletion of natural resources and serious degradation of the environment. Consumption has been promoted, while ignoring the impact on natural resources and the environment.

45. This is a system problem, and calls for a system solution ... but what might that be?

46. Conventional approaches to problem solving and policy making do not seem to work. There are many reasons for this. The socio-enviro-economic is very different today than it was 200 years ago and even 50 years ago. This changes everything, but many of the 'ideas' have their origins in past eras and are no longer of much relevance.

FAILURES OF CAPITALISM

48. The performance of the capitalist system in the last fifty years has been mixed, albeit better than the communist alternative. Capitalism in practice has been good for owners, but far less good for workers. In many 'rich' countries there are now record levels of inequity, and this is also becoming a problem in 'poor' countries as well.

49. The data show that the system of capitalism that served very well for a long time started to become less effective about 50 years ago. In large part, this was because improved labor productivity changed the global economy from one of endemic 'shortage' to 'surplus'.

50. It should also be remembered that the free market capitalist system has lurched from boom to bust over and over again in the last 200 years, and in the 20th century there were two World Wars.

EXISTENTIAL RISKS

52. The singular pursuit of success measured in money wealth now means that all sorts of future risks, including critical existential risks are ignored.

53. Some of these existential risks are:

- Sea rise;
- Mass extinction ... flora and fauna;
- Health care collapse due to antibiotic resistance
- Out of control social disruption due to alienation of youth
- Suffocation of a good society and a sustainable environment by a singular focus on money wealth as a measure of wealth and success.

54. With regard to risks, and especially existential risks, conventional accounting and financial analysis is wrong. It is absolutely wrong to do computations that result in a diminution of their impact simply because they are issues for the future and because the impacts are uncertain. Existential threats are, by definition, very substantial in nature and ignored at our peril.

INADEQUATE METRICS

56. Corporate profit, stock prices and GDP growth are the dominant metrics, but they no longer correlate to better quality of life and standard of living for the majority of the world's population nor do they provide any incentive to fix existential problems like resource depletion and environmental degradation that will result in climate change and biodiversity collapse.

2. THERE ARE BETTER WAYS

BETTER METRICS

59. As a Cambridge trained engineer / economist turned accountant, I see the issue of metrics as being a major component of this dysfunction. Most of the metrics used every day to determine progress and performance in society and the economy are badly designed and cannot work.

60. There are many initiatives that are working to address the problems of the environment, society and the economy. These include both legislative and voluntary initiatives to improve reporting by companies related to social responsibility, sustainability, workplace conditions, environmental impact and so forth.

61. Examples of these initiatives are:

- The Global Reporting Initiative (GRI);
- Integrated Reporting (IIRC);
- Impact Reporting and Investment Standards (IRIS);
- Sustainability Accounting Standards Board (SASB);
- and others.

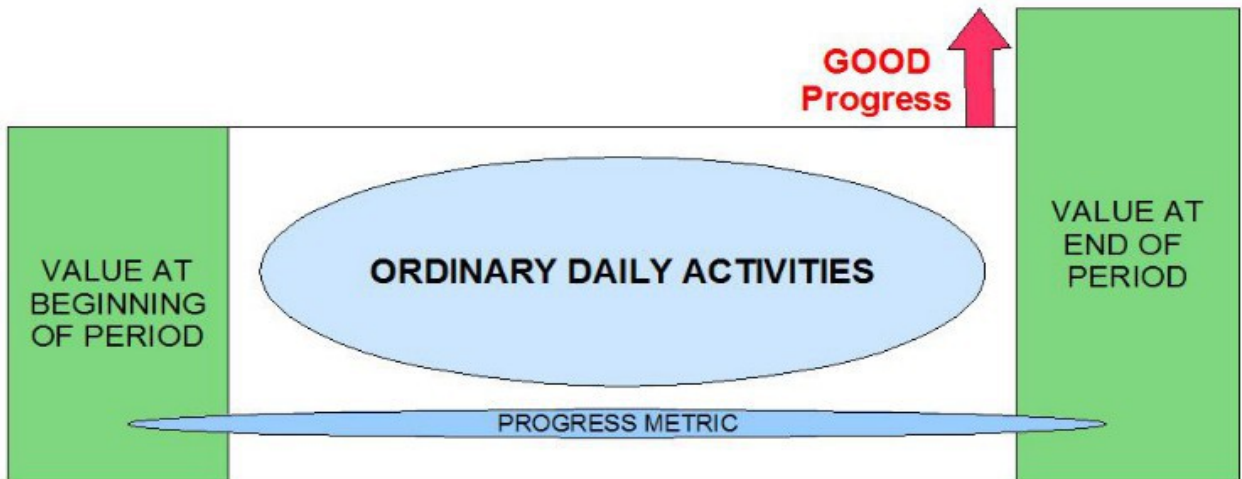
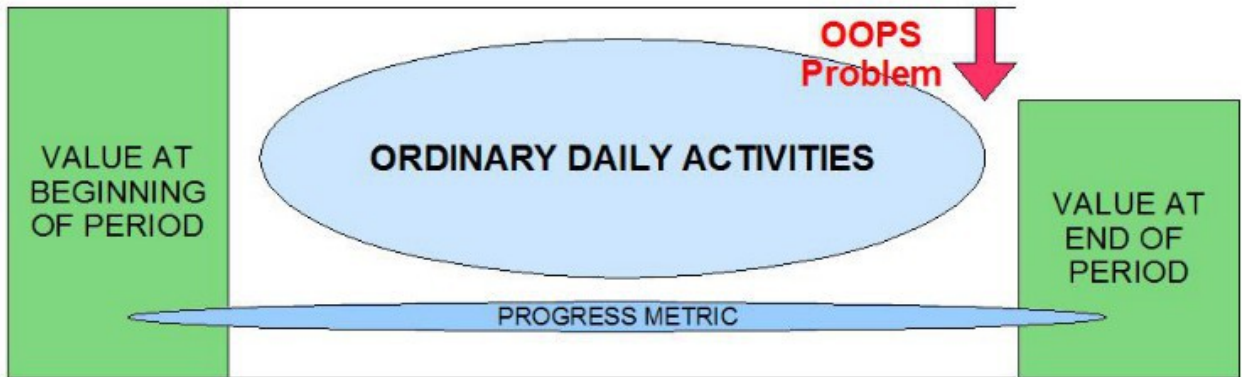
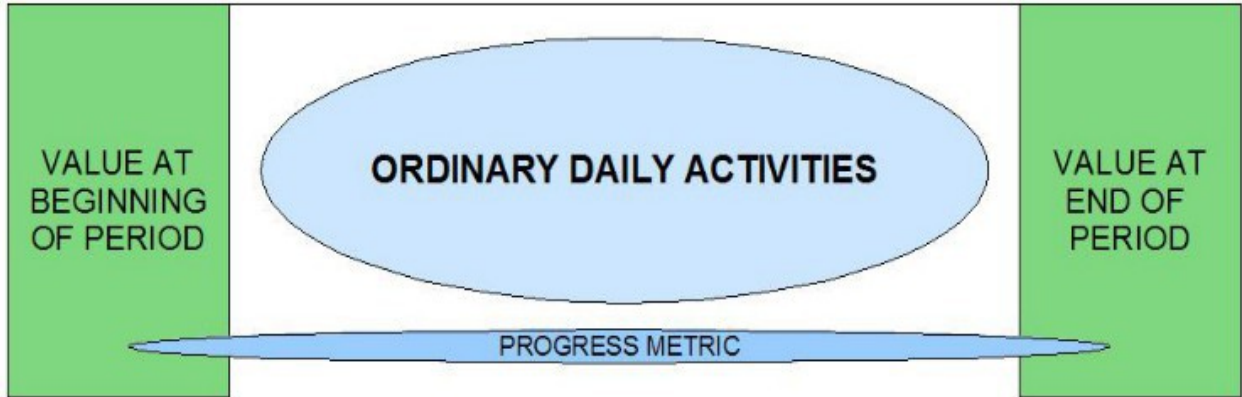
62. In general, these initiatives address the issue of reporting by companies, but do not address the broader systemic issues and the conflicting interests of all the relevant stakeholders and the different perspectives they all have.

63. Nor do these initiatives make it possible for relevant information to be accessible by ALL the actors in the socio-enviro-economic system. Without information relevant to PEOPLE and relevant for PLACE, the system will remain dominated by investors, companies and powerful politicians.

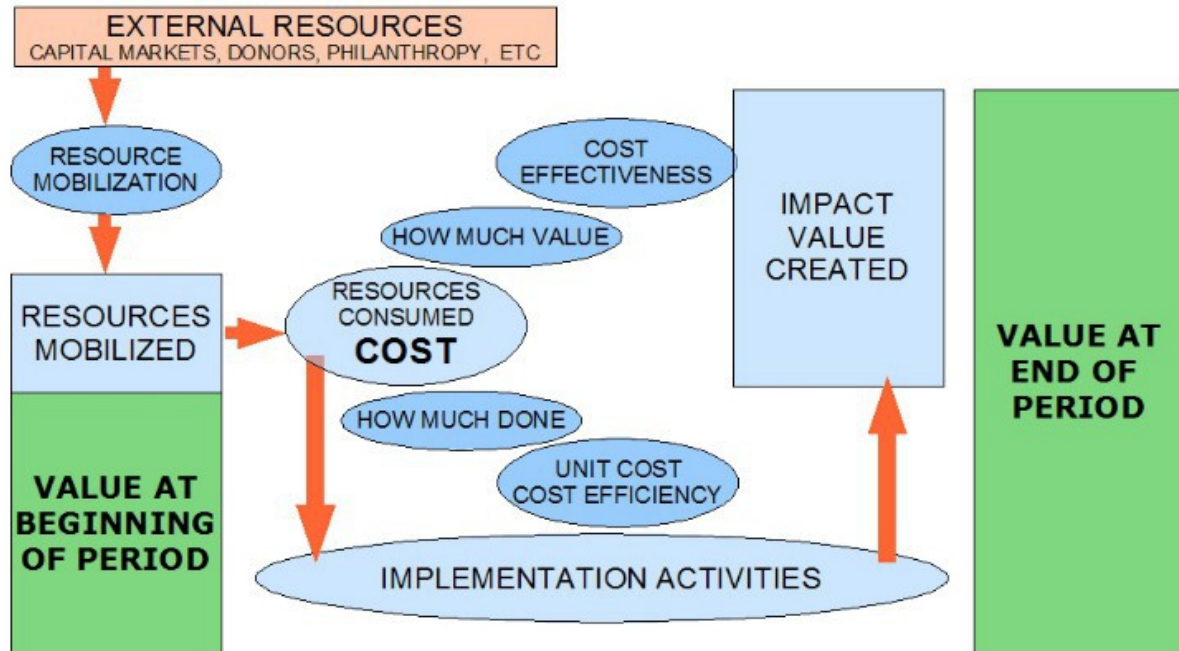
64. To a considerable extent these initiatives report on commitment and intention rather than the more important issues of accomplishment. Most of the reporting is not well integrated with the accounting systems. Furthermore, they are not easy to validate independently and reliably and expensive to implement.

MEASURING PROGRESS

66. Progress is a measure of the CHANGE IN STATE. There is no need to have any information about the activities that resulted in the progress ... merely the need to know the STATE at the Beginning of the Period (BoP) and the STATE at the End of the Period (EoP)



MEASURING PERFORMANCE



72. Most engineering students learn something about feedback loops. Effective feedback loops needed to result in a better society do not exist within the existing system or are broken. An important step to having a better society is to have more effective feedback loops and for this to be possible there have to be better metrics.

73. Relatively early in my career I was appointed VP Manufacturing for company making air-break switches for electricity transmission systems. My first challenge was to resolve a serious capacity constraint. I changed the daily production meeting from 10am the day following production to 8am the day of the production. Instead of talking about what had gone wrong, we talked about what needed to be fixed, and by 9am someone was working on it. The production soared ... some three times what was being achieved before.

THE GENIUS OF DOUBLE ENTRY ACCOUNTING

75. With conventional accounting the financial performance of a very very large organization can be summarized with just a few numbers ... the balance sheet and the profit and loss accounts. ... just two or three sheets of paper to summarize the performance of a company with hundreds of thousands of employees!

76. Luca Pacioli wrote about double entry accounting in the 15th century, but the method was already at least 200 years old. The double entry method of accounting has stood the test of time and is still at the core of every modern accounting system, which in turn is at the center of modern corporate management information systems.

77. Double entry accounting and the classification of accounts between balance sheet accounts and profit and loss (or transaction) accounts are at the heart of conventional business accounting.

78. Periodic financial reports summarize the balance sheet accounts and the transaction accounts summarize into a balance sheet and profit and loss account. It is a simple process that includes every money transaction of the reporting entity.

79. A key feature of conventional double entry accounting is that the change in the balance sheet from the beginning of the period to the end of the period is the same as the net total of the transactions ... that is the profit or loss for the period. This is a key feature that enables the reliability of the system.

80. In other words, double entry accounting is an elegant and powerful method for accounting for STATE and accounting for FLOW in an integrated coherent manner.

81. Financial accounting is powerful and at the core of every business management information system. On the other hand, there has been no systemic way for the impact on people (society) and impact on planet (environment) ... the externalities ... to be summarized and reported with the same rigor and efficiency.

82. Though it is widely recognized that there are many important things in life that have value but do not get associated with a money measure, there are no metrics for these things that have anything like the power of conventional accounting. Conventional accounting embraces cost and embraces price but does not embrace the matter of value.

83. Accounting for money transactions results in a company balance sheet that shows assets and liabilities in money terms. This is sometimes referred to as historic cost accounting. The 'book value' of the company is the excess of the assets over the liabilities.

84. In a money centric world, the financial 'value' of the company is a function of the profit performance of the company, and especially the potential of future profit performance. The mathematical computation of value is a net present value (NPV) calculation where future profits are discounted to a present value.

85. Conventional accounting takes into consideration the money transactions between the reporting enterprise and the world beyond the 'reporting envelope' of the enterprise. Revenues and costs are use to compute profit.

86. The reporting company may have subsidiaries. There are accounting rules for consolidating the accounts of subsidiaries into those of the reporting company. These rules eliminate the double counting that might otherwise arise in summary reporting.

87. Conventional financial accounting is rigorous about money transactions, but ignores everything else. Impact on society (people) and the environment (planet) are completely ignored in conventional accounting and financial analysis.

88. Specialized high profile 'business schools' have taught students how to improve the profit performance of companies, but there are no equivalent high profile 'society schools' or 'environmental impact schools' with curricula that train students in the management of issues that will improve the performance of every aspect of society and take care of the environment.

89. It should be noted that private companies and their owners have a very long history of behaving very badly with respect to their employees and the environment. Over the past 200 years, only a very few companies have taken the lead in making the world a better place.

3. SYSTEM OF MANY DIMENSIONS

THREE (3) MAIN SEGMENTS

92. We live in a very complex multi-dimension system that comprises PEOPLE, everything that is NATURE and everything that is MAN BUILT that is a SOCIO-ENVIRO-ECONOMIC SYSTEM that encompasses everything.

93. The 3 pieces of the socio-enviro-economic system are:

- People ... Human Capital;
- Planet ... Natural Capital ... Nature and natural bounty; and
- Man built structures and systems ... Man Built Capital.

TWELVE (12) SUB-SEGMENTS

95. Human Capital comprises:

- Human Capital (HC)
- Social Capital (SC)

96. Man Built Capital comprises

- Financial Capital (FC)
- Physical Capital (PC)
- Institutional Capital (IC)
- Knowledge Capital (KC)

97. Natural Capital comprises

- Water
- Land
- Air
- Ecosystems
- Life ... biodiversity
- Nature's energy

HUMAN CAPITAL

99. Human Capital Human capital is about an individual. An individual's wealth (financial capital) as described above is a part of an individual's human capital, but only a part. Human capital in the present has been achieved by an individual's history ... such things as parenting, nutritious food, good healthcare, good education, good surroundings, role models and so forth. Skills and experience are accumulated over time. There is a historic cost to getting these things, but the value accumulation is reflected in the present.

100. Past earnings that are not spent but saved, factor into the human capital of the present. Society or community also feeds into an individual's human capital. A society that has no violence and is supportive of an individual adds to human capital. A society where there is a future full of opportunity is also part of the state of human capital in the present. The present value of the future depends on what the future looks like, but also depends on what the individual has done in the past to be in a position to take advantage of the future.

SOCIAL CAPITAL

102. Social Capital Social capital is not the same as human capital, but is closely related. It is about community and friends and the good that emerges from a group of people. Social capital feeds into human capital and vice versa. Social capital is what people as a whole contribute to a community or place. Social capital is influenced by the institutional capital that exists in a place, especially things like religious organizations, cultural organizations, sports organizations and the security services that keep violence at bay.

FINANCIAL CAPITAL

104. Financial Capital Financial capital is also man made. Financial capital is the only capital that really does not exist per se, but is a function of the ownership and deployment of the other capitals. This is clear from a company balance sheet where the financial capital of the company is represented by the (physical) assets of the company less the liabilities.

105. The idea of equating progress to an increase in capital ... financial capital ... can be applied in a broader sense to everything ... to every dimension of capital.

106. Financial wealth has come from somewhere. It has come from the use of all sorts of resources in all sorts of ways to produce goods and services that people needed and wanted to improve their quality of life and standard of living. All of this could be accounted for by 'accounting for the money' associated with all of these transactions.

107. In times past impact on the resources, on the people, on the environment were not a part of the accounting, and the capital changes ... depletion or increase ... in all these areas was simply ignored. Nor did this matter very much. Better business did translate into more need for labor and the scale of economic activity relative to the available natural resources was modest.

108. To put this in perspective, in just over a hundred years the level of economic activity on the planet has increased more than 40 fold ... the population was 1.7 billion in 1900 and grew to around 7.1 billion by 2014, about 4 times. Standard of living is maybe 10 times better ... or more. The stress on resources and the environment is $4 \times 10 = 40$ and that is very dangerous and we have little or no idea what the long terms consequences will be.

109. For the 21st century we should not be ignoring the other dimensions of capital. They should be accounted for with as much rigor as there is for financial capital and the associated money transactions.

PHYSICAL CAPITAL

111. Physical capital is man built. Some of the physical capital is owned by people, some is owned by companies and some is owned in the commons by the state.

112. There are factories, machinery and equipment, jigs and dyes, vehicles, furniture fixtures and fittings that are assets of companies and on their balance sheets.

113. There is infrastructure, that is roads and bridges, airports, seaports and water systems and sewer systems that have been built by government and are maintained by government or others.

114. There is working capital, including inventory of product, that is mainly owned by private sector organizations. There are products, that is goods and services, that are consumed by people to satisfy their needs and their wants.

115. There are houses owned or occupied by people. There are commercial buildings. There are city transit systems. There are parks, theaters for cultural events and stadiums for sports events. There are hospitals and there are schools, universities and research apparatus.

116. Money is in part a piece of physical capital in the sense that physical money (or its virtual equivalent) has been used to make transactions efficiently. When used as a measure, money does not need to have a physical form. Nor when money is used to enable an economic transaction, it does not need physical form.

117. Everything in physical capital has been built using resources and impacting the environment. There is impact on people and the environment embedded in every part of physical capital.

INSTITUTIONAL CAPITAL

119. Institutional Capital Institutional capital is also man built. There are institutions that have a role in enabling an efficient economy and better society. There are laws, rules and regulations that are man made and part of an enabling environment. There are a variety of organizations that enable efficient economic activities, and provide all sorts of services that make for a better society. There are security services, there are police and courts and prisons. There are religious organizations and a variety of organizations for recreation, the arts and sports.

120. There are organizations that specialize in healthcare and organizations that specialize in education and the creation of knowledge. There are utilities that take care of the supply of water and sanitation and utilities that generate and distribute electricity. Institutions are a critical part of the enabling environment for efficient economic activity and for people's quality of life.

KNOWLEDGE CAPITAL

122. Knowledge Capital Knowledge capital is man made. Some might argue that it is mankind's ability to build knowledge capital that has differentiated mankind from the other animals. Knowledge has grown at an amazing pace for the past 200 years, and continues to accelerate. The technical limit to knowledge capital is the ability of the human brain to process information and understand. There is a prevailing system constraint associated with money not being available to deploy and pay for the available brains.

123. There are other issues with knowledge. One is that some knowledge is hidden and/or controlled by knowledge ownership otherwise referred to as intellectual property (IP) which is used or not used at the owner's option. Another issue is that knowledge has the potential to be used for bad rather than good. In many cases the use of knowledge results in change with some being winners and others being losers.

124. Similarly an individual's wealth (financial capital) may be represented by ownership interest in various assets ... house, car, personal property, stocks and bonds, insurance policies, etc ... less liabilities. Financial capital presently is the dominant component in the perception of success.

NATURAL CAPITAL

126. There are many components to natural capital. There is the sun. There is life ... whether this is human life or all the other life forms from single cell organisms to all sorts of fish and animals and to plants in all their varieties. There are minerals and there are fossil fuels that represent

millions if not billions of years of sun energy capture. There is land and water and atmosphere. There are ecosystems and biodiversity.

127. Nature works in many mysterious ways that we know nothing about, but are essential to the good health of people and the planet.

NATURAL CAPITAL WATER

129. WATER is essential for life, and an essential part of many of the processes that enable production of the goods and services we need and want.

130. WATER is abundant, but only a very small part is fresh water suitable for use in support of life and industrial production processes. Some places have good supplies of fresh water, other places are short of water, in some places extremely short of water.

131. In some places WATER is mined, meaning that water is extracted from deep aquifers that have been in place for thousands of years and do not get replenished from current rainfall and water flows. Libya has been doing this, as has California.

132. WATER is a powerful solvent. Water carries toxins of various sorts through watersheds. Water picks up toxins during industrial processes and these exit factories as toxic effluent doing damage to natural ecosystems as it progresses to the sea.

133. WATER TREATMENT of city and industrial effluent is an important way to reduce ecological damage.

NATURAL CAPITAL LAND

135. LAND has been exploited for monetary gain throughout history, but until the last 200 years much of the world's land remained in a natural state.

136. When LAND is converted from its natural state to a building construction site, natural ecosystem services are destroyed and a building emerges. In conventional financial analysis, the building has value but the ecosystems services do not. From a simply financial perspective this is a win.

137. In reality ecosystem services have enormous value and are essential to a flourishing society. Without wetlands, for example, much of the fish and seafood in the ocean would disappear. Without forests there would be substantial destabilization of the world's climate. Without land in its natural state, many species of animals and birds would not survive.

138. When land is developed, that is converted from a natural state to a building site, there is BOTH value destruction and value creation, and both of these should be taken into account.

NATURAL CAPITAL ATMOSPHERE

140. The atmosphere is an essential part of the natural system that helps to stabilize all the other processes that maintain the planet earth as we know it.

141. Without AIR, people suffocate. It is an essential part of the ecosystem that supports life. But air is also used to dump an untold amount of gaseous and particulate waste that does damage to human health and changes the way the atmosphere behaves in a variety of undesirable ways.

142. Early in my career I worked for a company that manufactured about 90% of the aerosol products sold in the United States. This was in the 1960s. This business contracted massively when it was recognized that aerosol propellants were a big contributor to creating the ozone hole in the atmosphere. The company changed in part because it was the responsible thing to do, but also because society required it.

143. When sulphur dioxide is emitted from an industrial process or power plant, the result is acid rain which has a role in damaging woodlands downwind from the source. Modern emission control technology (scrubbers) are available to reduce this type of pollution almost completely.

144. When nitrous oxides are emitted from industrial processes or vehicles the result is a noxious pollution that is bad for human health. Catalytic converters on vehicle exhausts (as required originally by the State of California) significantly reduce this type of pollution.

145. When large amounts of gases like carbon dioxide and methane ... the so called 'greenhouse gases (GHGs)' ... are emitted into the atmosphere, they change the composition of the atmosphere and its physical properties. Critically, with higher concentrations of GHGs, the atmosphere lets in more heat energy from the sun to heat the planet and lets less heat out. The result is global warming.

146. In turn global warming sets in motion a whole lot of changes in the systems that have been in equilibrium for many thousands of years. A very large number of changes in the global ecosystem must be anticipated. This is an extremely complex set of systems and accurate predictions are impossible ... but what is certain is that there will be changes.

147. Because of GHGs and global warming, there will be ocean rise. The amount of ocean rise depends on the amount of polar ice that melts. If half the ice melts there will be ocean rise of some 25 meters. Many respected scientists are predicting a sea level rise of between 5 and 9 meters within the next 50 to 100 years. Every coastal city in the world is at risk.

148. There will be massive changes in both fauna and flora. Most of nature has been in an equilibrium state for many thousands of years and cannot change rapidly to a new equilibrium. This will cause uncontrollable mass extinction. For example, many of the major forest ecosystems are already under stress and trees are dying.

149. Higher concentrations of carbon dioxide are changing the chemical characteristics of the water in the oceans. In turn this is putting stress on the natural life of the seas and species are not surviving. This is aggravated by other man-made activities that are polluting the oceans.

150. Temperature changes in the oceans will change the water flows that have been relatively stable for thousands of years. There will be changes in these global currents, but what they will be is unclear. Changes in global currents have the potential to cause major disruption to practically everything.

NATURAL CAPITAL ECOSYSTEMS

152. We now know something about the important services that the natural world provides which enable a natural environment in which animals, including humans can thrive. We do damage to natural capital at our peril.

153. Despite this, there is no accounting for the impact economic activity has on natural capital ... no accounting for the depletion of resources, no accounting for the degradation of the environment, no accounting for the good that arises in nature (biodiversity, ecosystem services, etc). This has to change.

NATURAL CAPITAL LIFE ... BIODIVERSITY

155. Life is something of a miracle, but we humans take it for granted. Human knowledge is increasing, but we only know a small part of what exists in nature. Without more care than we have had in many generations, we will lose much of the biodiversity that may well be important for long term survival of life, including human life.

NATURAL CAPITAL NATURE'S ENERGY

157. ENERGY has been at the center of human progress during the last 200 years, but mainly energy from fossil fuels. This energy is compact and concentrated, but will not last for ever and in the process will likely pollute the planet in ways that pose existential risk.

158. There is a huge amount of energy from the SUN that hits planet earth every minute of every day, enough energy in a few minutes to supply the world's energy needs for a year. This energy is not easy to use, but science and technology can be deployed to exploit this so that we can have energy and reduce the existential risks associated with business as usual in the energy sector.

4. BETTER MEASURES

BETTER MEASURES THAN MONEY

5. Money is a powerful metric in a simple society but is not so good for the complex modern world. Using a money and a market mechanism as the only significant measure of the progress and performance of a complex system is bound to be a failure.

BETTER MEASURES THAN GDP (GROSS DOMESTIC PRODUCT)

7. Poor performance of the overall system has been aggravated by measures like Gross Domestic Product (GDP) at the macro level. GDP was introduced in the 1930s to help understand the Great Depression and subsequently the economic impact of war and post-war demobilization.

8. The weaknesses of GDP as an economic measure have been recognized for over fifty years. Kuznets himself ... the creator of the GDP measure in the USA argued for a better measure and Robert Kennedy described some of its weaknesses in a famous speech at the University of Kansas on March 18, 1968.

9. "Too much and for too long, we seemed to have surrendered personal excellence and community values in the mere accumulation of material things. Our Gross National Product, now, is over \$800 billion dollars a year, but that Gross National Product - if we judge the United States of America by that - that Gross National Product counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl. It counts napalm and counts nuclear warheads and armored cars for the police to fight the riots in

our cities. It counts Whitman's rifle and Speck's knife, and the television programs which glorify violence in order to sell toys to our children. Yet the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile. And it can tell us everything about America except why we are proud that we are Americans."

10. GDP only measures economic flows, but it is used as a proxy for the state of the economy, assuming in a very crude way that the more the GDP, the better the economy and the better for people. In reality, this correlation is very weak ... but paradoxically, the bigger the GDP the easier it is for the performance of business to look good. More there is of GDP growth, the easier it is to have corporate profit growth and higher stock prices.

BETTER ACCOUNTING ACCOUNTING FOR THE 21ST CENTURY

12. Accounting for the 21st Century Accounting for the 21st Century must include metrics that are relate to the environment, society, and the total economy rather than merely being for the organization. This is accounting for every part of this amazing and complex system that is the environment, the society and the economy.

13. (TVA) addresses these problems. The goal is for TVA to be easy to use and expand the capabilities of conventional accounting so that the impact of economic activity on everything ... like impact on people, and impact on the environment ... to be brought into account.

14. Conventional accounting has a focus on the single dimension of money, while TVA accounts for not only money transactions, but also the impact of economic activity on everything else. TVA will enable analysis that embraces not only the impact profit has on financial capital, but how economic activity impacts everything.

15. TVA aims to be a tool that can be used in many different situations. The same data and data architecture works for a person, for a product, for a place and for the profit and impact of an economic activity or an organization. The logic is relatively simple ... but as usual, the devil is in the detail.

16. Quantification ... Measures Beyond Money MDIA will incorporate multiple units of measure ... and use standard values for the accounting. Standard values are something like standard costs in cost accounting.

17. Money had its origins in being a measure of the price in an economic transaction. It facilitated trade and was very much more efficient than barter. How money became a store of value is a long story, and how money became a key component in money wealth creation an even longer story.

18. Money has its uses, but it is a very poor unit of measure for almost everything that is important in the world we live in. The size of a money unit has no definition at all ... it is determined by a market that is also impossible to describe and replete with 'invisible hands' that may or may not control everything.

19. The value of a product ... goods or service ... is not the amount that it can be bought or sold for. That is a price. The value is what a product contributes ... to a person directly and to society in general and also taking into account the impact there is on natural capital. What this means is that there is a need for several units of measure and related quantification along the following lines.

20. BETTER DATA FOR ANALYSIS

21. STANDARD VALUES (similar to standard costs)

22. Money Money is an important metric ... but seriously flawed in many ways. It is too entrenched to be changed very much in the short run ... but it must be complemented with other units of measure (UOM).

23. UOM for Life and Quality of Life A key characteristic of this UOM must be that a life has value no matter who the person is. It is too entrenched to be changed very much in the short run ... but it must be complemented with other units of measure (UOM).

24. QUANTIFICATION OF MAN BUILT CAPITAL

25. Quantification of Man Built Capital Quantification of Financial Capital – Money Units The money measure needs to be better understood. It is common to use a reference currency like the US dollar, but local currency also matters, and there may be funding currency as well. Besides the US\$, other reference currencies might be the Euro, Japanese Yen or Chinese Yuan

26. Quantification of Man Built Capital Quantification of Physical Capital – Money Units Physical capital includes products, the goods and services needed for people to have a decent quality of life, it includes buildings and infrastructure. Physical capital needs to be measured both in static and in dynamic terms, and in terms of money units and in terms of various impact units. Of special note are products that flow through the enviro-socio-economic system delivering impact in the form of quality of life and impact on everything else as they go through the life cycle.

27. Quantification of Man Built Capital Quantification of Institutional Capital Institution capital has impact. There are money costs to support institutional capital and impact costs when institutional capital is inadequate. There is both a static and a dynamic dimension.

28. Quantification of Man Built Capital Quantification of Knowledge Capital Knowledge capital is the enabler of a high performance socio-enviro-economic system. Knowledge may be thought to behave somewhat like energy ... potential energy, kinetic energy, heat energy and so on. Knowledge has money costs to support research and all sorts of impacts when knowledge is used, both good and bad. There is both a static and a dynamic dimension.

29. Quantification of Man Built Capital Quantification of Social Capital Social capital is the group version of individual human capital. Social capital has impact on individual human capital and individual human capital has impact on social capital. There is both a static and a dynamic dimension.

5. MULTIPLE PERSPECTIVES

31. The conventional perspectives about the economy and society are these:

- Organizational performance, corporate profits and stock market prices

- Macro economics at the country level, with some drill down to more local issues

32. These perspectives work for the owners of physical and financial assets, for investors in corporate organizations and corporate executives, as well as providing the political class with talking points. However, there are other perspectives that are essential to enable an efficient society and economy that optimizes for everything and has people as a top priority and planet at the center.

33. (TVA) is accounting about everything from multiple perspectives. It is a data system to reflect 'facts' about the system we live in in a way that is as simple as possible and as complete as possible.

34. FACT

35. Data about the FACT

36. Data about the FACT using STATE and FLOW metrics

37. Data about the IMPACT this FACT IS having on its surroundings

38. Data about the IMPACT this FACT IS having on its surroundings and also HAS HAD and WILL HAVE in its surroundings

39. This means impact on PEOPLE

40. This means impact on the ENVIRONMENT

41. This means impact throughout the life cycle of a PRODUCT, from virgin materials, through the supply chain, through use and into the post-use waste chain

42. This means impact on everything in a PLACE

43. This means impact on all the complex NATURAL CYCLES that enables all the natural processes essential to life

44. To have better OUTCOMES in a complex system, ALL the decisions have to be better, and for this a starting point is BETTER METRICS

6. PEOPLE

MEASURING WHAT REALLY MATTERS

47. Being alive as a human being is really a big deal. In a system of metrics that makes sense, a person is an asset. At the same time this asset has a cost to maintain, and a value because of what this asset can contribute to society.

48. In the nature of things, a human being only lives for a short number of years ... rarely more than 100. There is a fact of depreciation of the asset over this time ... or usually shorter.

49. In a lifetime a person will go through several phases, each of which is different in terms of costs (inputs required) and contributions made.

50. There are a variety of feedback loops that change the trajectory of a person's life from childhood, to adult life, to being an elder. A life is impacted by the surroundings, both natural and man made.

Quantification of Human Capital – Life Units

A unit of measure for quality of life may be driven by reference to the value of life itself. There is life, and there is quality of life. The value of life should not be directly related to a money unit, but be defined independently from money. The unit could be defined as 1 life = 1 million life units. Everything to do with quality of life is associated to this unit.

MANY PERSPECTIVES FOR AND ABOUT PEOPLE

53. When all is said and done, the thing that people care about the most is people ... and mostly themselves. Society and the economy is made up of people organized in various ways and for various quite different purposes and goals.

54. Money profit accounting has made it possible for ownership of money and wealth to become proxies for success. For the person gives a lot more clarity about the true state of the person and the performance of the person both for themselves and their role in making society and the world a better place.

55. TVA is a better way for people to account to themselves for their progress and performance. The idea that being wealthy is the only goal in life, is such a diminution of what people want and are capable of ... and misses completely the value of what people can contribute to society.

56. There is a whole lot of life that is good and valuable, but never expressed in terms of money and money transactions. People have passion, energy and ideas that are of enormous potential ... but ignored in policy formulation that gets driven by the conventional metrics around organizational performance and GDP growth.

57. It is, however, impossible to account for these things when they are not quantified. The idea that these important things only have value when they are transacted for money is absurd.

PERSPECTIVE of a PERSON as a CHILD

59. It is now recognized that the most important phase of human development is in very early life ... before the age of (say) 4. During this time the human brain is developing at its fastest. During this time the value of parenting is huge with a value that persists for a lifetime.

60. Rapid human development continues throughout childhood. Children learn in many ways during their childhood, some of it through formal education but a very large part by informal interaction with their surroundings.

61. Family and friends are a big part of this, and also the neighborhood and the larger community.

PERSPECTIVE of a PERSON as a PARENT

63. A child gets value from parenting. A parent gives value by parenting. This is one of the most important inter-generational cycles in the system, and absolutely must be valued appropriately.

64. Different cultures approach parenting in different ways, but it is vital for healthy society that parents are able to give their best to parenting.

PERSPECTIVE of a PERSON as a SENIOR

66. Seniors need more of some things and less of others. They probably need more healthcare but they need less of many other material goods.

67. Seniors have experience that should be shared with younger people ... it is sometimes called wisdom.

PERSPECTIVE of a PERSON as an INVESTOR

69. A person as an investor wants a business to be earning a good profit and increasing in value. To the extent that profit conflicts with impact on people and planet, the goal of the investor will tend to that which increases the value of the investment.

70. As long as the metrics for determining value ignore impact on people and planet, the typical business will be obliged to maximize profit no matter what the impact on people and planet.

PERSPECTIVE of a PERSON as an OWNER

72. A person as an owner has the same focus as an investor

PERSPECTIVE of a PERSON as a MANAGER

74. A person as a manager has to function within the strategic goals and culture of the organization. Where the goals and culture incorporate metrics about people and planet as well as profit, then the manager can function in one way, but where the only metric is corporate profit, then a different behavior is required.

PERSPECTIVE of a PERSON as an EMPLOYEE

76. A person as an employee wants to have as big a wage as possible while the company as employer wants the payroll to be as small as possible. This tension has existed since the beginning of time, with the balance of power shifting all the time.

77. Since the 1970s rapidly increasing productivity has moved the balance in favor of the employer who can now produce more with less labor. As long as the only metric is profit, then labor will be increasingly at a disadvantage.

78. In the long run as labor is more and more diminished, then eventually markets for products is diminished and eventually profits diminish ... but as Keynes famously said "In the long run we are dead!"

PERSPECTIVE of a PERSON as a CUSTOMER

80. As a customer, a person wants a good product at a low price. The company with only profit orientation wants to sell a product that has a low cost and a high price.

81. When there is a True Value perspective, then issues like the impact on people and society and the environment can be taken into consideration.

82. With only money profit accounting, the customer buys product which creates revenue which is a component of profit. The more sales that are made to customers the better. With TVA people need some goods to satisfy needs. Quality of life is not merely about more 'stuff'. Some customers are short of both money and the things they need, but many customers with money have excess stuff and are simply adding to WASTE

83. In a money profit accounting regime, advertising is used to inform the customer in a manner that is all about selling the company's products. The more the better. More sales, more profit. With TVA and when customers are well informed about products and the IMPACT that products

have on their own quality of life and on everything else, it is customers that will be in control and make the difference.

A PERSON PERSPECTIVE OF PURPOSE

85. The purpose of all economic activity is to enable a better quality of life and standard of living. For a very long time a 'better' quality of life has been assumed to be a result of being more wealthy, and the metrics of performance in the modern economy have this as a foundational element. Quality of life is much more nuanced than this, and effective metrics are going to have to take this into consideration.

86. In the end, progress and performance should be evaluated based on the impact an economic activity has on people (society) together with the long term impact on the environment (planet).

7. NATURE

QUANTIFICATION OF NATURAL CAPITAL

89. There need to be several units of measure within natural capital (NC) because of the many roles that natural capital plays in the success of everything. It would be good if these could be summarized or consolidated into a single unit of measure of natural capital as a whole, but this requires more understanding of natural capital values than there is at the present.

WATER

91. The value of water should be related not so much to a money price, but as much to the value of life and the value of water to nature.

92. The cost of water varies depending on the abundance of water and whether or not water is renewable in the place where it is used. The cost of water must include the cost of release of polluted water into the environment.

93. The unit of measure for water could be that 1 liter of net water consumption = 1 water unit. Many things associated with water and water pollution could be related to the idea that 1 liter of fresh water has a value of 1 (say).

LAND

95. The value of land should be related to a land value unit, and adjusted to reflect all the various uses there are for land, and not just those that are priced into money units as a result of trade. There is value in land when used for eco-services (forests for carbon, wetlands for fisheries, wildland for bio-diversity, natural land for water purification, etc). The unit of measure of land could be that 1 hectare of land = 1000 land units.

96. The value of land should be related to a land value unit, and adjusted to reflect all the various uses there are for land, and not just those that are priced into money units as a result of trade. There is value in land when used for eco-services (forests for carbon, wetlands for fisheries, wildland for bio-diversity, natural land for water purification, etc). The unit of measure of land could be that 1 hectare of land = 1000 land units.

97. Land use is constrained by a limited and fixed amount of land, and the value will change depending on the use being made of the land. Land may be used for urban development,

suburban communities, rural agriculture, industrial use, tourism and various forms of ecoservice and habitat for bio-diversity.

98. Many things associated with land and land use could be related to the idea that 1 hectare of undeveloped natural land equals 1000 (say)

99. Quantification of Natural Capital Natural Capital – Resource Depletion and Environmental Degradation Mining and fossil fuel extraction.

The use of minerals and fossil fuels in economic transactions puts a price on the resource, but the loss of this resource must also be accounted for in the loss of natural capital. The value of the resource does not need to be quantified when it remains in situ, but when it is depleted the value could be accounted for based on the value the mineral or energy contributes to economic performance. The unit for this can be money ... the same as for Financial Capital.

AIR

101. Environmental degradation includes the impact of greenhouse gas emissions on the atmosphere and the equilibrium of the weather. A unit of measure could be based on the idea that one metric ton of carbon dioxide emissions = 1000, and everything to do with air pollution gets related to this unit. Many things associated with atmospheric pollution could be related to a ton of carbon dioxide emissions where 1 ton of CO₂e equals 1,000 (say).

102. A unit of measure could be based on the idea that one metric ton of carbon dioxide emissions = 1000, and everything to do with air pollution gets related to this unit. Many things associated with atmospheric pollution could be related to a ton of carbon dioxide emissions where 1 ton of CO₂e equals 1,000 (say).

ECOSYSTEM

104. What is amazing about nature is that all the pieces fit together ... there is a coherence about nature that has emerged over many millions of years. What is problematic about man's interference in natural systems is that nature has evolved very slowly while man now has the power to change elements of the system very rapidly and in ways that might induce massive instability and potential disaster.

105. As long as no value is assigned to the services that are provided by the ecosystem, then doing business as usual means that destruction of the ecosystem can proceed without any cost and consequences for decision makers in the system. This has to change and better metrics is a part of the change that must be made.

LIFE, BIODIVERSITY

107. Compared to the past, man knows much more now, but there is much more that is unknown. We know little of the nature of life and the huge biodiversity that exists on the planet ... yet man's behavior is resulting in mass extinction of much of this rich biodiversity.

108. As long as no value is assigned to life and biodiversity, then doing business as usual means that destruction of biodiversity can proceed without any cost and consequences for decision makers in the system. This has to change and better metrics is a part of the change that must be made.

8. PLACE

110. PLACE is where we all live and where we work. When place is right, then it is so much easier for everything else to be right. Place is permanent, not transient.

111. Place is permanent, not transient. Because of this it become possible to have accountability more than in other structures like, for example, a project.

PERSPECTIVE of the PLACE (Community)

113. COMMUNITY is a PLACE and very important for quality of life. It is the closest to the individual and the family. "Act local" means acting in the local community. Get the community right, and a lot of other things become a whole lot easier.

PERSPECTIVE of the PLACE (City, Region)

115. CITIES or REGIONS are a totality of communities. While a community cannot function without interaction with other communities, cities and regions have the potential to be self-sustaining. Cities and regions are more easily managed at the policy level than a nation, especially a large and diverse nation.

PERSPECTIVE of the PLACE (Country)

117. COUNTRIES have been the dominant policy making entities in the world for a long time, with mixed results. Countries ... national pride ... has been used to sustain power cults with very bad outcomes. Less country power and more community power may well be a better model for sustainable social progress.

PERSPECTIVE of the PLACE (Planet)

119. The PLANET is important. The human race has only one planet to live on, and it should be treated with respect. The idea of "Think global and act local" means that there should be respect for the planet, but out actions at the local level should result in good impact at the global or planet level.

120. Another big step will be to have better information about place. The reality is people live, work and play in a place ... or places. Places are for ever and progress or deterioration of a place can be observed relatively easily.

121. Better metrics about places will make it possible to track progress and performance of a place in much the same way that analysts are able to track to performance of a company over time. At the moment, the relationship between progress and performance in a place is not at all clear, but it should be and could be with better analytical metrics about the place.

122. The planet perspective is 'big picture' and important to understand, but action for change has to come where action can be tangible. Pollution has an impact on the planet, but pollution has to be addressed where it is created in a place, but use of a product, by an individual person or group or by an organization.

123. The resources of the planet and the energy of the sun are big enough to support a huge people population if ... and only if ... knowledge and technology are used in a very smart way to deliver quality of life.

124. Everything happens in a place. Impact accounting has a special relevance in a place. The place is always there. Bad actors can be identified and held accountable. Trends can be observed over time.

125. Money profit accounting ... There is no money profit accounting for place. There is merely an assumption that economic activity is good for the place, no matter what.

126. Impact accounting ... The place is the best way to organize impact accounting about everything. It is where the idea of PLANET has some reality. There can be accountability for all actors in the socio- enviro-economic system and impact on the environment observed.

127. Most governments around the world are short of money There is a revenue problem with too low taxes, too many loopholes and simply failure to pay taxes. There is also an expenditure problem with government performance extremely inefficient.

9. ORGANIZATION

129. Companies, corporate organizations, are the most efficient way to implement transformation. Applied technology, systems thinking and cost accounting are very highly developed and the results amazing.

130. In a typical business setting:

- Profits are maximized.
- Company valuations are high.
- Products are abundant.
- Society has more employment but also more unemployment.
- Environment is being degraded and there is resource depletion.

INADEQUACIES OF THE PROFIT MEASURE

132. The singular focus on profit performance as the driver of good results at the macro level has to be supplemented by multiple perspectives so that everyone may be involved in making better decisions for themselves and for the environment, society and the economy as a system ... as a whole.

133. In the prevailing system of socio-economic analysis there is an assumption that what is good for an organization is good for society. This had some validity in the past, but no more. In many ways higher performance by an organization results in lower performance for people and the environment. This is not captured in conventional accounting but knowledge about this and metrics are required for the optimization of the whole enviro-socio-economic system.

OPTIMIZING FOR TBL PERFORMANCE

135. To manage for the Triple Bottom Line ... profit, people and planet ... there has to be a coherent framework for analysis that includes:

- the ORGANIZATION as a whole (PROFIT);
- discrete UNITS of the ORGANIZATION;
- industrial PROCESSES used in transformation;
- natural PROCESSES that sustain everything;
- discrete PRODUCTS flowing through the system;
- PEOPLE and their quality of life;

- PEOPLE as INVESTORS and their wealth; and
- PLACE which is the locus for everything.

136. To manage for profit AND impact we need to apply the TVA framework for analysis for the:

- ORGANIZATION as a whole;
- discrete UNITS of the ORGANIZATION;
- PROCESSES used in transformation;
- PRODUCTS through their life cycle;
- PEOPLE and their quality of life;
- PLACE and how place impacts Human Capital and interacts with Natural Capital.

137. It is optimizing for ALL of these things that results in the best possible socio-environmental system performance and the best Triple Bottom Line results.

138. Everything a company does has an impact not only on the profit of the enterprise but also on society (people) and the environment (planet). Too many decision makers with business focus have ignored these impacts while optimizing for profit alone.

GETTING FROM FINANCIAL ACCOUNTS TO INTEGRATED REPORTING

140. Material Costs (Virgin Materials) Money profit accounting ... material costs are a cost to the business and earnings are reduced by high material costs. Supply chain and outsourcing reduce costs and improve profit. Impact accounting ... The impacts as materials flow through the supply chain must be brought into account as the material is transformed, and then carried forward in the new products.

141. Material Costs (Recycled Materials) Money profit accounting ... material costs are a cost to the business and earnings are reduced by high material costs. Supply chain and outsourcing reduce costs and improve profit. Impact accounting ... The impacts as materials flow through the supply chain must be brought into account as the material is transformed, and then carried forward in the new products.

142. Energy Costs Money profit accounting ... energy costs are a cost to the business and earnings are reduced by high energy costs. Impact accounting ... There are very substantial environmental costs associated with energy from carbon based fuels. There is also the cost of resource depletion. Energy impacts in the supply chain should be accounted for.

143. Employees and Payroll Money profit accounting ... payroll is a cost to the business and earnings are reduced by higher payroll and benefit costs. Higher wages might mean higher productivity and be good for profit. Impact accounting ... There is a direct benefit to the employees and their families with higher wages, but in addition there is a multiplier effect in the community as this money is spent.

144. Advertising and Public Relations Money profit accounting ... these costs are justified because successful advertising and PR increases revenues and profit. Impact accounting ... With impact accounting, the indirect impact of increased sales on society and the environment may be brought in to account. For some people more is better. For the more wealthy the impact of more is almost totally related to more damage to environment.

145. Workplace conditions Money profit accounting ... low cost, low safety working conditions might result in short term profit maximization ... but the risks are high especially if the cost of

reputational damage is included. Impact accounting ... The impact of poor workplace conditions should be accounted for throughout the supply chain and brought into the true cost of the product.

146. Use of physical assets Money profit accounting ... this is usually accounted for by a depreciation charge which reduces profit and provides for deterioration of the physical asset. Impact accounting ... There is not only the physical plant owned by the company but also the public infrastructure that is being used which should be brought into account.

147. Payment of taxes With money profit accounting, taxation reduces business earnings available to the owners. With TVA the benefit arising because payment of taxes funds Institutional Capital (i.e. Government) which in turn is critical for the viability of a society and the commons upon which everything depends. This value is brought into account with the use of TVA.

148. Pro-Good expenditures With money profit accounting, pro-good expenditures reduce business earnings that are available to owners, and may be driven solely by potential tax advantages. With TVA, many aspects of pro-good expenditures reflect on the performance of the business because impact on people and society is part of the business accounting.

149. Process Where profit is the main metric the process used in transformation will be engineered to be minimum cost to optimize investment and profit, without so much consideration of the impact on people and environment. With TVA the impact on people and planet gets as much attention as the impact on profit.

150. Product design Where profit is the main measure, product design has a focus on reducing costs while maintaining sales volume. This is good for profit. With TVA good product design factors into all the impacts throughout product life cycles from the beginning of the supply chain, through use to the end of the post-use waste chain.

151. Customer needs Money profit accounting gives incentive to 'more' no matter what the real need. This translates into more waste, and as such profits are up, but society and the environment go down. TVA links business revenues to specific products, and then the products to the benefit derived by consumers.

10. PRODUCT

153. The Product Perspective In the end the economy is driven by the decisions of people who have needs and wants and are consumers. They buy products ... that is goods and services ... that they need and want. In turn companies produce these things, and so on back through the supply chain. Companies know this and invest heavily in the advertising of their products and the building of their brands.

154. Society does not have any equivalent to convince consumers to act in the interest of themselves, of society and the environment. The only interest behind advertising and influencing the consuming public are the product manufacturers and marketers. This asymmetry is dangerous and has to be changed.

155. A big step will be to have multi dimension metrics about products. The buy or not to buy decision by a consumer should be guided by a clear information of what goes into that product through its whole life cycle.

156. There has been a lot of work on life cycle assessment but this work remains academic and is not deployed in a systematic way to inform every consumer all the time, and especially during the buy or not to buy decision time.

157. Business informs consumers all the time with their advertising and brand promotion ... but independent objective information about the life cycle of the product and its impact on society and the environment is missing.

LIFE CYCLE ANALYSIS METHODOLOGY

159. Life Cycle Assessment for Profit Many business initiatives are 'profitable'. Applying some of the concepts of life cycle assessment (LCA) to profit will clarify what profit is good for society and the environment and what profit is anti-social and doing damage to the environment.

160. LCA for Profit example: The oil industry In Saudi Arabia is very profitable ... low cost oil and relatively high international prices. The 'profit flow' has enabled expenditures that have built most everything in modern Saudi Arabia and funded important social initiatives like education. A very positive LCA outcome

161. Another LCA for Profit example: Addictive drugs are very profitable. There is a strong demand for the products of the illegal drug trade and profits are high. Some of this 'profit flow' is used to ensure that addiction continues and to ensure that the authorities lose in their attempts to control and eliminate the trade. A very negative LCA outcome

PRODUCT FLOW AND IMPACT

163. PRODUCT ... that is goods and services ... are the connection between PEOPLE, ORGANIZATIONS and NATURE. The STATE of these entities changes as product FLOWS through the system.

164. ORGANIZATIONS have PROCESSES that transform resources from NATURE into PRODUCTS that are purchased by PEOPLE to support their quality of life and standard of living.

165. PEOPLE as they use and then dispose of PRODUCT are far removed from the IMPACT the production of the product has had on environment and the IMPACT of its post use waste chain.

SUPPLY CHAIN

167. PRODUCT flows through a SUPPLY CHAIN. With money profit optimization the supply chain may well result in a race to the bottom in respect of issues like workplace conditions and impact on the environment.

168. With TVA the IMPACT of all the PROCESSES in the SUPPLY CHAIN are brought into account and embedded in the cost, price and value attributes of PRODUCT. The brings issues like workplace conditions and impact on the environment into account from end to end of the supply chain.

PRODUCT as a RESOURCE for the ORGANIZATION

170. Under conventional money profit accounting products needed for production in the organization are optimized based on money cost. With TVA the optimization also takes into consideration the impact attributes associated with the product as a result of the supply chain.

PRODUCT as a source of REVENUE for the ORGANIZATION

172. Under money profit accounting, optimization of profit means highest possible prices and lowest possible money costs.

173. With TVA optimization has also to take into account the impact of the product during its whole life cycle, including impact on society and the environment along the supply chain and in the post use waste chain.

PRODUCT (goods and services) that satisfy needs of PEOPLE

175. PRODUCT ... goods and services ... are bought by PEOPLE to be used to sustain their quality of life and standard of living. With only a money basis for their buy decisions, least price products in money terms will be selected.

176. With TVA where PRODUCTS are associated not only with a money price but also with the full supply chain impact, the selection of products will be based on a more complete set of facts about the true cost and value of the products being bought.

POST USE WASTE CYCLE

178. WASTE that does not have any use has an impact on the environment as it either gets stored in a landfill or is irresponsibly dumped in the environment.

179. With conventional money profit accounting the least money cost handling of waste is the norm with the impact on the environment ignored.

180. With TVA, optimization of decisions about waste includes consideration of impact on the environment and other ways in which the product might be repurposed for other uses.

CONCLUDING THOUGHT

181. CONCLUDING THOUGHT Many initiatives are going forward to improve access to key data. (TVA) complements many of these initiatives. More detail about TVA are available on the TrueValueMetrics website.

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182. END OF PART 2 IN PART 1 THERE ARE THESE SECTIONS:

183. 1. INTRODUCTION AND CONTEXT 2. THERE ARE BETTER WAYS 3. SYSTEM OF MANY DIMENSIONS

184. GO TO PART 1:<http://www.slideshare.net/PeterBurgess2/tva-for-tbl-part-1-of-2-version-of-151231>

185. REMINDER This slideset is A WORK-IN-PROGRESS. It will be upgraded periodically. It is part of a series of more than 100 slidesets. Navigation to these is available here:

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186. THANK YOU Some links and contact information: Email Peter Burgess ... peterbnyc@gmail.com Peter Burgess LinkedIn profile

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159. END OF PART 1 IN PART 2 THERE ARE THESE SECTIONS:

160.

4. BETTER METRICS

5. MULTIPLE PERSPECTIVES

6. PEOPLE

7. NATURE

8. PLACE

9. ORGANIZATION

10. PRODUCT

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163. THANK YOU Some links and contact information: Email Peter Burgess ... peterbnyc@gmail.com Peter Burgess LinkedIn profile

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2. CONTEXT This slideset is a Work-in-Progress and will be updated from time to time. It is part of a series that aims to enable better metrics for the complex socio-enviro-economic system that we all live in. Metrics are powerful, but they must be the right metrics.