



TRUE VALUE IMPACT ACCOUNTING (TVIA)

Overview

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1 – CONTEXT

Complex ... Problems AND Possibilities

OVERVIEW

PROGRESS and PERFORMANCE

There is a lot to say about progress and performance, but while there has been progress over the last two centuries and the last few decades, the progress for people ... everyone ... has been very modest compared to the amazing progress that there has been in knowledge and the power of technology. Some people have become very wealthy using the power of technology, but a very large number of people have been disadvantaged by technology and the way decisions have been made to manage the global socio-enviro-economic system. Worse progress has been made without taking into consideration the related damage to the environment.

When looked at from the perspective of profit and financial wealth, there has been progress, but this progress has been made at the expense of both society at large and the environment. The economy of the United States has produced substantial growth of financial wealth over the past fifty years ... and indeed 200 years ... but it has done so at the expense of society which has progressed very little in recent decades and the environment where degradation is accelerating. The United States has the most inefficient economy in the world when considering the relationship between quality of life (as measured by GDP per capita) and the degradation of the environment (as measured by CO2 equivalent emissions)

ISSUES ... thousands of issues

There are thousands and thousands of issues that need to be addressed, and while many of the issues are well understood, rather little has been done to do what is needed to solve these problems. Though there is more knowledge than at any time in history, and more education, and more communications there is a dangerous lack of understanding of how the socio-enviro-economic system actually works and the things that need to be done to address systemic problems.

SYSTEMIC DYSFUNCTION

SOCIAL PROBLEMS

Local, National and Global

The global population grew from 1.7 billion people in 1900 to 7.1 billion in 2014. The majority of the world's population now live in cities with populations exceeding 10 million people and there are projections that more than 80% of the population will live in urban areas within the next few decades.

Nevertheless, quality of life for people still depends to a large extent on what goes into making the local community a quality community.

Much of the data collection and comparative analysis of the socio-enviro-economic system has had a focus on country or national level performance. This simplification has been practical but

the results not very useful. People live in a community that exists in a country and without the community level understanding the analysis falls apart!

Multiple Systemic Social Issues

Jobs, low wages, unemployment

There are more people needing income from work than there are jobs needed to make the things people need. Much of this structural unemployment comes from new methods of production and increased productivity, and some is from the growth of production in previously agrarian societies.

Poverty

Too many people are in poverty ... in both rich and poor countries. The reasons are very different and solutions difficult, but far too little progress has been made over the past 50 years to eliminate chronic poverty.

Hunger, malnutrition, ill-health

Too many people are hungry, have malnutrition and are in ill-health. While many people are living longer healthier lives, there are still many people who die young from malnutrition and preventable diseases. There is food insecurity and there are dysfunctional healthcare systems.

Religion / Culture

There has been religion and culture in every human society for all of history. They seem to be an essential integral part of society. Modern materialism appeared to replace some of this, but it seems that religion and culture endure in spite of other changes. They need to be better understood in order that they are a power for good rather than for evil.

Social risks

The lack of jobs, the rates of poverty, the amount of inequality, migration and cultural differences are all stresses on social cohesion. Political leadership does not have any simple answers because there are none. Discontent is growing and in many places, accelerating. This is an existential threat to a peaceful world.

Civil war, physical destruction

There has been far too much civil war both in the distant past and in recent years. The value destruction associated with physical destruction is not accounted for in the costs of war, but is massive.

War, violence, human destruction

With war, there is massive destruction of human capital ... death and disability result from war and violence. Value destruction of human capital is huge and not accounted for. Too much, the loss of human life is ignored unless it is the death of someone close ... but all life lost has someone close ... and nevertheless the value destruction gets ignored!

ENVIRONMENT

Local Cause gives Global Effect

Local sources of pollution

The origin of ALL environmental pollution is local, but many of the bad effects are realized beyond the local area. For example: water is polluted at a point source where toxic chemicals are dumped into a stream, but the impact of these toxins flows down the stream through the whole of

the watershed and eventually into aquifers and/or into the sea. For example: plastic containers are very convenient for the distribution and sale of drinks and food but most of their disposal is simply to discard them in the easiest of ways, which usually means simply into the natural environment where they eventually move into streams and rivers and into the sea. For example: some gases emitted into the atmosphere cause acid rain downwind from the point source, other gases add to greenhouse gases that result in global warming.

High consumption / Inefficient processes

Production processes are various point sources for much of environmental pollution, but the amount of production is directly correlated with the amount of consumption. The driver of the problem is consumption, and the design of the products and processes that serve this consumption.

Elements of the Natural System

Land

Land is a very important element of the environment. Increasingly, there is a shortage of land as human population increases. The importance of land in enabling ecosystem services has not been appreciated, and in this regard there has been massive degradation.

Biodiversity

As human populations encroach on land and natural ecosystems, more and more plant and animal species are at risk of extinction.

Deforestation

The loss of trees in order to supply hardwood, and to expand agricultural production from palm oil to beef is ongoing and profitable while intensely damaging to global climate stability.

Sea level rise / Sea temperature rise

Climate change is real and Arctic and Antarctic ice is melting at an accelerating pace. Sea level is rising slowly but surely, as is the sea temperature. More and more coastal flooding is going to happen ... and some has already started.

Extreme weather

The increase in temperature means that there is much more energy in the environment, and in turn that means there will be more and more energy in the storms. Storms do happen, and they will be more and more extreme.

Pollution

Companies are interested primarily in profit and single use plastic packaging is very profitable, but terrible for the environment. Companies use water in their processes to produce profit, but post production waste water costs money to treat, so more profitable to dump into a local stream. Pollution has a cost to society, but little cost to the companies that make the products that pollute!

ECONOMIC ISSUES

Economic Risks

Macro-economic risks are not well understood and policy driven by political ideology is extremely dangerous. The banking crisis of 2008 was contained by injecting trillions of dollars worth of extra liquidity into the global banking system. The banking system is more stable now a

decade later, but other elements of the socio-enviro-economic system are increasingly unstable with potential for collapse.

Corruption

Corruption is profitable ... and as long as profits are more important than anything else, there will be corruption. Corruption is wrong, but corruption is a win-win for all of those engaged in corrupt practices. Corruption will not end until the world gets serious about punishing ALL the participants ... on top of more transparency, accounting and accountability.

Inequality

The problem of growing inequality has been evident for some 40 years or even more, yet policy makers have done almost nothing to address the problem. (see corruption above!). Economists have described the problem over and over again, but nothing has been proposed to fix the problem. (See later in this paper ... page ??)

Money / Currency

Money is an essential part of an economy, but modern money wealth is being treated as the most important goal of economic activity when it really is not. Money cannot be either the engine of the economy or the fuel, it is an essential lubricant. Rethinking money / currency needs to be a priority of economic thinking.

Markets / Intangible Value

Fifty years ago the value in capital markets was not significantly different from the value of tangible net assets of corporate balance sheets ... but financial engineering over a long time has changed this so that now intangible assets dominate, social inequality is out of control and the environment badly degraded.

WRONG METRICS

Wrong assumptions

Economists, academics, politicians and others have made a lot of wrong assumptions about how the socio-enviro-economic system actually works. Part of this is because of the way the performance of the system is measured. More does not always mean better.

Corporate performance

Investors and business owners have a legitimate interest in business performance, but the assumption that a good business performance correlates to good social and environmental performance is just plain wrong. Corporate performance is not only about the generation of profit and financial wealth, but also about the impact the operations are having on quality of life for society and the impact the operations are having on the sustainability of the environment. There are strong measures for financial performance but essentially nothing for impacts on society and the environment.

All the other actors

There are many other actors besides those that benefit directly from corporate profit performance. There are the customers of businesses, and the suppliers and the neighbors of businesses ... and the employees. The relationships between these many actors is complex and the idea that what is good for profit is good for all the other actors is invalid.

Non-linear relationships

There is a linear relationship between standard of living and consumption in a poor economic setting, but in richer more mature economic this linear relationship breaks down and worse more consumption correlates strongly with more damage to the environment.

What about happiness?

What about happiness and all the other many intangibles that make life worth living. Merely having more 'stuff' is not what life is really all about. Friendship and beauty have huge value but are ignored by conventional prevailing metrics.

What about environmental damage?

Profit is a key measure of corporate performance and the valuation of stocks, but on its own is also very dangerous because key issues of social progress and environmental performance are ignored. As long as profit is the dominant metric, the performance of the socio-enviro-economic system will be compromised. Better metrics are essential (See later in this paper ... page ??).

IDEAS / POSSIBILITIES

There are many, many ideas and the possibilities are huge, but there are constraints. One of the worst is that good ideas that are just about doing good for society or good for the environment are starved for funds, while anything that is going to make financial profit not matter how obnoxious in other respects gets funding!

TECHNOLOGY

Knowledge, research, education

The amount of knowledge, research and education going on today around the world is at an all time high. This should be a foundation for progress, but there must also be all the other elements of an enabling environment for progress to be made, and these are often absent. Worse ... increasingly research is only funded where profit is possible, leaving other important research opportunities unfunded!

Technology, materials, computer science

Knowledge in itself has little value, it only becomes valuable when it is applied to improve tangible things ... technology, materials, computer science and all the engineering derivatives that are possible.

Enabling initiatives

Good ideas can become good initiatives, but they will only succeed if they are adequately resourced. There are many good initiatives with good ideas, good people and no funding, especially projects that will do social good or environmental good, but are not going to produce profits. Conventional funding for good projects does not work, and cannot work with the prevailing singular focus on profit performance. (See later in this paper ... page ??)

PEOPLE

Understanding potential

Merely being better than before may not be good enough. For example, the power of technology is enormous, but the progress of society is quite modest. Technology has been used almost

exclusively to improve profit performance, but almost not at all to make the world a better place. Yes ... the world is a bit better ... maybe ... but compared to what is possible, not so much!

Nice people ... the 99%

Most people are nice people, but that does not 'make the news'. When people are angry, there are usually powerful reasons which leadership is ignoring. Building on the goodwill of nice people can make all the difference in the world.

CHOICES

Better metrics ... TVIA, other

Existing conventional metrics are old and obsolete, but better metrics are possible and indeed essential. As Peter Drucker, the management guru has said: 'You measure what you manage' and accordingly it is essential to measure the right things. Corporate profit, GDP growth and stock prices are not sufficient to get the most desirable outcomes for the global complex socio-environmental system.

Better goals ... SDGs, etc

Better goals, like the MDGs and the SDGs are steps in a good direction ... but goals and commitments without the essential follow-through do not get to the results that are needed. Metrics are an essential complementary piece!

Eliminating and Avoiding Constraints

Good ideas, good projects often fail to achieve their potential because there are quite small constraints that make success difficult if not impossible. Identify and eliminate constraints and big progress can be made at relatively low cost.

II – SYSTEM

Socio-Enviro-Economic System

THE SOCIO-ENVIRO-ECONOMIC SYSTEM

STATE (CAPITALS) and FLOW (PROCESSES)

The Socio-Enviro-Economic System is very, very complex. It is a lot more than an 'economic' system, because the process of creating financial capital (that is financial wealth) also results in impacts on all the other parts of the system.

The way the system works is that the many various activities or flows have impact on the starting state to produce an ending state. The STATE or CAPITALS are the equivalent of a balance sheet in conventional double entry accounting. The FLOWS are the equivalent of the profit and loss account in the accounting system.

These same ideas are similar to the way many of the processes in science work and also like the processes in engineering thermodynamics.

STATE of the CAPITALS is changed because of ACTIVITIES or PROCESSES that are being used to produce PRODUCTS, that is goods and services.

The FLOW associated with CAPITAL being used and new CAPITAL being created results in value being created or not ... in value add or value destruction.

STATE ... THE CAPITALS

ALL the Capitals

The TVIA sub-segmentation of capitals is as follows:

- (1) SOCIAL CAPITAL
 - (i) Human Capital
 - (ii) Social / Relational Capital
- (2) NATURAL CAPITAL
 - (iii) Natural Capital
- (3) CREATED CAPITAL
 - (iv) Physical Capital
 - (v) Financial Capital
 - (vi) Knowledge Capital
 - (vi) Institutional Capital
 - (vi) Cultural Capital

Note that the exact way in which the capitals are segmented is not of great importance. What is important is that ALL the capital is taken into consideration and accounted for, and not simply the financial capital.

More about the CAPITALS

The STATE is made up of ALL the CAPITALS. Capital is State, and State is Capital.

CAPITALS change when there is an activity (or process) that has an impact on the capital. Most, if not all processes have an impact on more than one capital. When financial capital increases, other capitals change, and in most cases, decrease.

In recent decades, financial capital has increased substantially and at the same time there has been a significant decrease in natural capital, and social capital changes have been mixed with both winners and losers.

SOCIAL CAPITAL

SOCIAL CAPITAL comprises Human Capital and Social / Relationship Capital and is the most important part of the socio-enviro-economic system ... at any rate from the perspective of humankind! Most logically, the improvement of SOCIAL CAPITAL should be main aim of everything that gets done.

For most of the past two centuries since the invention of modern economics there has been an assumption that better profit performance for people and organizations would result in improvement in the STATE of people ... that is an improvement in SOCIAL CAPITAL ... and while this assumption works in a shortage economy with poverty and low productivity, it does not work in the same way for wealthier, higher productivity surplus economies. For these economies explicit actions to improve SOCIAL CAPITAL has to be the main priority.

(1) Human Capital

Human capital ... the STATE of people, of the population ... is the most important capital and also one of the most complex.

The way human capital is numbered or quantified should be independent of conventional money ... human capital should not be '*monetized*' but should have its own unit of measure or unit of account.

(2) Social / Relationship Capital

Social / relationship capital is the STATE of society. It is associated with human capital but can be bigger or smaller than the sum of human capital depending on the way the comes together or not.

NATURAL CAPITAL

(3) Natural Capital

Nature is the foundation for everything, and a really amazing construct. The more humankind learns about nature, the more amazing it seems to be, whether it is the natural world of outer space or the micro-miniature details of particles that make up everything in the world we live in ... and then the question of how all of this fits together to enable live of every imaginable variety.

But nature is also finite and potentially very fragile. During the last 250 years the deployment of created physical capital has done massive damage to natural capital and probably made it impossible for the essential equilibrium of natural capital systems to be maintained, This is an existential threat that is recognized by most scientists but rather little by the general public and

especially many in political leadership, business and banking leadership and investors. Some understand the risk but mostly action is too little and too slow.

To understand and manage natural capital, there are several elements as follows:

- Land
- Water
- Air
- Ecosystems
- Biodiversity
- Climate systems
- Mineral resources
- Energy resources

CREATED CAPITAL

There has been growth in CREATED CAPITAL throughout the history of humankind going back millions of years. It has been accelerating all of this time, but it is only in the last few hundred years that CREATED CAPITAL growth has accelerated past the kink in the hockey stick.

CREATED CAPITAL is everything that humankind has created to make the socio-enviro-economic system work more efficiently, and because this capital is created by humankind it may also be changed and improved by humankind. This is important. While human nature may be difficult to change, and natural systems may be impossible to change, CREATED CAPITAL can be changed if people and society decide that it should be changed.

(4) Physical Capital

Physical Capital has a big role in determining the efficiency of the socio-enviro-economic system. The efficiency of every PROCESS is a function of the physical capital that is deployed to make the process work.

Physical Capital includes buildings of which there are many type, and it includes machinery and equipment used to produce goods and it includes infrastructure used for transportation and for the supply of utilities like water, sewer, electricity and communications.

Physical Capital enables the PROCESSES that that produce the products that are the foundation for the material wellbeing of PEOPLE and SOCIETY,

(5) Financial Capital

In the prevailing socio-enviro-economic system, the most important and powerful element of performance is the growth of financial capital. Maximizing this growth has been the focus of prestigious business schools for many decades, with financial engineering better rewarded than real engineering. The distortions that have resulted are immense and it will be difficult and costly to remediate the damage done.

A big part of Financial Capital is intangible. One of the most common forms of intangible capital is the 'Goodwill' that arises when a company is purchase based on the value of stock that is in excess of the net asset value of the company balance sheet. More broadly the value of stock based on stock market prices in total is far higher than the total of the net asset value of the related company balance sheets. In the 1960s the difference was maybe around 10% to 20%.

Fifty years later the equivalent calculation has a difference more like 200% to 300%, and for some sectors of the economy even more.

(6) Knowledge Capital

The knowledge that people have built up over the years that enables all sorts of amazing technology to be deployed to help make progress.

(7) Institutional Capital

The organizational structures, systems, laws and regulations that go into making an effective enabling environment for progress. There is no question that 'organization' is required in order to get things done ... it has been true throughout history ... but there are also protections that are needed in order for the system to be fair. While people have the capacity to be good, human nature is such that there is evil that must be protected against.

(8) Cultural Capital

There are many manifestations of culture including music, dance, theater, and art. Also there are things like history, traditions, architecture and historic sites ... and food. All of these give meaning to life, and ground a society to the place and the traditions.

FLOW / PROCESS

Processes

Processes are central all manufacturing and the efficiency of processes determines the cost of the product and the performance of the company.

In the modern world, most products flow through many processes in the course of production, and often through processes in different companies and/or in different places. At each step of the supply chain there is a process.

The efficiency of a process has many dimensions. In most companies the most important of these is the money cost dimension which has a direct bearing on the profitability of the product and the organization.

A process also has a social dimension and the impact the process has on people and society. One of these issues relates to workplace safety. Workers should not be at risk of injury because of the way a process is designed and operated. In some countries there has been substantial improvement in workplace conditions, but not everywhere. There is also the issue of fair wages for the work that is being done.

In addition there is an environmental dimension and the many ways in which the process may have impact on the environment. The use of raw materials like iron ore, bauxite, phosphates, etc impact natural capital, as does the use of fossil fuels like coal, crude oil, natural gas deplete the stock of resources. Large scale processes like open pit mining damage the land in many different ways and often result in polluted water as well. Large scale agricultural production often starts off with deforestation which has a knock on effect into wildlife and biodiversity. Gaseous emissions into the atmosphere have degraded the natural system to a dangerous extent and probably caused global warming and destabilization of the global climate system with consequences that might well be catastrophic. There is also the problem of solid waste that results from most processes.

Very few companies know much about the environmental impact of the inputs to their processes ... a problem that gets more and more difficult as the supply chain gets longer and more complex.

Actors

Some things cannot be directly influence by people. Human nature seems to change very slowly if at all, and nature is both powerful and complex and pretty much established in how it works.

Otherwise, almost everything that happens is caused by the decisions people make. All the small decisions made by almost 8 billion people aggregates to something of great importance. Some individuals have more power than others, and different levels of leverage, but in the end it is people that are going to determine how well people live and how all the critical issues are addressed.

In conventional economic analysis there is much attention paid to the role of COMPANIES and their PROFIT PERFORMANCE because this has impact on STOCK PRICES ... but it also true that it is PEOPLE that are associated with all of these decisions. (See more about ACTORS later in this paper ... page ??)

Exchange / Trade

Exchange and trade have been important in giving people a better life, going back thousands of years. Free and fair trade **always** delivers added value, though not always in an equitable way between the parties.

Money has been an important part of making exchange and trade more efficient, and modern money continues to have an important role in how the socio-enviro-economic system works. (See more about EXCHANGE and TRADE later in this paper ... page ??)

Products

Products are an important part of the socio-enviro-economic system. Products ... that is goods and services ... determine quality of life and standard of living. When there is a shortage of product, quality of life suffers. Shortage has two forms: in one case there is enough money to buy things but the product is not available, and in the other, the product is available but there is not the money to buy the product.

For most of history the amount of product has been constrained by the ability to produce. In recent decades ... essentially since the 1970s, productivity has been so high that the global economy went from being a shortage economy to being one of global surplus production.

Over the past fifty years, many essential products have become lower in cost, better in performance and more profitable all at the same time, There has been disruption for this to happen, and this has been achieved not only from an increase in productivity but also by making more use of lower paid workers and moving production to less regulated and more dangerous workplaces.

Products are also responsible for environmental damage during their production (see processes above). Much of the environmental damage may be deep in the supply chain and not easy to identify in the final product ... but it is there.

Advertising has done substantial damage to the environment and society while helping to make products profitable for companies. Almost all advertising aims for people to buy more even in cases where people have absolutely no need for the 'shiny new bauble'! For advertisers and the companies that pay them, more product sales is always better for the company ... the best for the customer is not part of this equation.

Streams

Products flow through the socio-enviro-economic system. It is a stream or a strand or a string with IMPACT happening all along the stream from the beginning of the life of the product to its end. A product comes together through multiple supply chains and then into the final production process, and then a use phase, and finally a post use waste phase.

Initiatives to change the linear characteristics of product manufacture, use and disposal to flow that has more circularity are growing in number and in scale.

It is very clear that the simple 'cost, price, profit' framing of decision making is not enough for companies. Nor is simple price and presentation enough for decision making in the case of consumers. Much more information about the 'stream' is needed.

This can be done implementing a universal system of 'standard value profiles'.

Sectors

For a long time ... maybe a hundred years or more ... analysis of the economy has been segmented by SECTOR, and organizations like the World Bank, the UN and Universities have been organized along sector lines. Technology has evolved within the 'silo' of the sector. To some extent this has enabled appropriate specialization, but it has also been a constraint where multi-sector interaction is essential, as in a PLACE where people live and work. (See more about SECTORS later in this paper ... page ??)

Place

There was a time in history when PLACE was very very important. The real estate mantra that there are three important facts: 'Location, location, and location' was so very true of PLACE. Major cities grew up in places that were efficient for the economy of the time and were mostly on the coast and near the mouth of important rivers.

PLACE remains very important because PLACE is where PEOPLE live and where everything comes together to enable quality of life or not. (See more about PLACE later in this paper ... page ??)

III – METRICS

You Manage what you Measure

METRICS and MANAGEMENT

Without metrics ... NO management

Conventional metrics give wrong signals

You manage what you measure ... but you had better measure the right things. Measuring profit means better profit performance, but not measuring social progress means relatively poor social progress and not measuring environmental impact means relatively poor environmental performance. Because measurement is difficult should not mean the issue is unimportant!

Metrics for implementing entities

There are important differences between implementing entities and reporting entities. For a small simple business organization they can be one and the same thing, but for larger complex organizations they are most likely to be very different.

The management information needed to implement in the most efficient way is more detailed and granular than the information that is needed to report the performance of the organization to outsiders and those merely interested in strategic performance.

Metrics for reporting entities

Metrics should be agnostic

Progress and performance measurement should be implemented whatever the entity. The framing of the system of measurement should be the same wherever it is used ... and it should be used everywhere.

CONVENTIONAL METRICS

Corporate Performance

Corporate performance is mainly about profit performance and increase in the price of the stock ... and the metrics to measure this profit performance are very very sophisticated both at the level of the analytical cost and management accounting and all the other supporting management information and analytics. There is no management information of equal sophistication about the impact on human / social capital and the impact on the environment / natural capital.

There have been many initiatives in the past few years to encourage more reporting of social responsibility, sustainability, etc and to encourage responsible investment ... initiatives like the Global Reporting Initiative (GRI), Integrated Reporting (IR), Principles for Responsible Investing (PRI) and others ... but none of these initiatives up to now has addressed the issue of how to number this reporting in a generally acceptable low cost manner.

The big lesson from corporate performance metrics is that metrics do work and work very well to improve performance. The challenge is for corporate performance metrics to be broadened so that ALL the impacts of corporate activity are taken into account, and not just the profit component and its very good impact investors.

Economic Analysis

Economic analysis has a very different framing from that of corporate performance. The subject of economic analysis is more complex than corporate performance analysis, and the data far less reliable. Nevertheless economists have been able to describe the state of the economy quite well for many years. Economic analysis has been much less successful in describing the behavior ... the cause and effect ... that has been driving the changes in state of the economy over time.

Many of the issues associate with economic inequality have been described by economists for many years ... even decades ... but there is little agreement about what exactly has caused this and what to do to make the economy more equitable. Correlation is interesting, but not enough to get to better decisions.

Worse, a singular focus on GDP growth to solve economic problems begs the question of how economic growth also grows environmental degradation and profit growth is often associated with reduced employment and reduced payrolls ... and of course there is little consensus about the impact of changes in tax rates on corporate behavior and economic performance more broadly.

Investment Analysis

For most of recent history investment analysis has been all about corporate profit and what corporate profit projections do for stock prices. Stock market prices correlate very reliably with the net present value (NPV) of future flows of profits.

Initiatives like the UN Principles for Responsible Investing launched in 2007 (now PRI) are encouraging investment analysis that includes a lot more than just profit. They support the idea that environmental, sustainability and governance (ESG) are important as well as simple the raw profit performance.

There is a growing interest in doing better investment analysis that goes beyond simple financial analysis ... but as of now, little agreement on how to do it ... and to the extent that better methods are emerging they are often of a proprietary nature and being used to give competitive advantage to the owner!

Impact Reporting

There are now thousands of companies that are publishing sustainability reports, up from just a very few a decade ago. While financial reports can be a very quick read, and show very clearly the financial state of the company and its profit performance, sustainability reports are usually very long and many many words, stories and pictures and rather little to show much about the total impact of the company's activities on human / social capital and on the environmental / natural capital.

Better impact reporting is desirable and better impact reporting is possible.

BETTER METRICS

Introduction to True Value Impact Accounting (TVIA)

Characteristics of TVIA

Peter Drucker famously said '*You manage what you measure*' and there is much evidence that this is true. It is also therefore essential that all the important things that get measured, and it is vital that the measures are not 'gamed' in inappropriate ways to gain corrupt advantage.

Transparency, accounting, audit, and accountability

There is a lot of talk about transparency and accountability, but in practice almost the only place where this is practiced is between the stock market and the reporting of corporate profits. Audit is mandated in this part of the reporting ecosystem in order to protect investors from company operators seeking to lie about their company's financial performance, and companies are expected to do accounting using Generally Accepted Accounting Principles.

Better reporting about social and environmental impact

Relevant transparency, accounting, audit, and accountability are missing when it comes to the impact company operators are having on society and the environment. This is the essential purpose of TVIA.

Caveat ... wrong metrics are worse than no metrics

Metrics are very powerful, and accordingly it is important that the metrics being used are suited to the situation. This is one of the reasons that data flows should be fast and feedback about progress timely. Unintended consequences should be responded to very rapidly and the causality identified.

Core Concepts

Double entry accounting has been used for hundreds of years, and is used by every (well managed) organization on the planet. TrueValueMetrics has a similar structure and complements existing double entry systems to make them much more relevant and useful for management in the 21st century.

The core concepts are derived from natural science and engineering, and from the essential core structure of double entry accounting and the classification of accounts into balance sheet accounts and profit and loss accounts.

Double Entry

The idea of double entry accounting goes back many hundreds of years. It was carefully described in the late 15th century by Luca Pacioli, but there is much other evidence that it was being used a long time before that. This system of accounting was very reliable and enabled merchants to give an account of their transactions to the investors that had funded their ventures,

Classification of Accounts

The key classification of accounts is the differentiation between BALANCE SHEET accounts and PROFIT AND LOSS accounts. This is the way STATE and FLOWS are accounted for in conventional double entry accountancy and is the way in which value metrics for everything should be designed.

True Value Impact Accounting (TVIA) ... Overview

In this classification:

- Assets and Liabilities are Balance Sheet accounts
- Cost or expenses and Revenues are Profit and Loss accounts.

The difference between total assets and total liabilities is Net Assets ... which is the value of the business to the owner ... sometimes referred to as the Owners' Equity.

The difference between total costs and total revenues is the Profit (or Loss) ... profit when the revenues exceed costs, and loss when costs exceed revenues.

Cost, Price and Value

The general public, and indeed many experts including economists conflate cost, price and value. They are not one and the same thing. They are very different.

Better decision making requires a lot more clarity about what is cost, what is price and what is value.

For example, a patient pays a price for some healthcare intervention. The cost may be something very different, made up of the wages costs of doctors, nurses, technicians, etc. and the cost of equipment, the cost of space, the cost of medications, the cost of admin, etc etc. The customer (the patient) only knows the price, which may or may not include a profit (or indeed a loss) which may be reasonable or not. Value is a completely different thing. If the intervention saves the patient's life, the value is essentially priceless!

The delta between price and cost is profit.

The delta between value and cost is value add.

The delta between value and price measures how good a buy is for the customer.

Advertising does not bring clarity for the customer, rather confusion and the idea that more purchasing will improve the customer's quality of life ... whether or not this has any reality in fact!

State and Flow

Initial state ... Activities or Flows ... Ending State

A core idea in conventional double entry accounting and also in TVIA is that the impact of flows or activities changes the STATE from what it was initially to what the STATE becomes post activity.

In conventional money profit accounting the Balance Sheet at the beginning of the period (BOP) is changed according to the activities reflected in the period Profit and Loss Account to become the Balance Sheet at the end of the period (EOP)

This concept is very similar to the ideas throughout science and in particular in many of the industrial processes based on engineering thermodynamics, chemical engineering, etc. The beginning STATE changes because of some process to become the ending STATE. The value add is the delta between the two states.

Measuring Performance

Progress and Efficiency

Progress

There is PROGRESS when SOCIAL CAPITAL increases. Over the past two hundred years there has been progress, but profit progress has been more than social progress and there has been massive degradation of the natural environment. True progress must be measured by comparing the STATE of ALL the CAPITALS at the beginning of a period with the state of the capitals at the end of the period.

There is power in the double entry construct and the classification of accounts that has been used by accountants for hundreds of years. This construct makes it possible to measure profit without having detailed information about the individual transactions flowing through the profit and loss account. When the balance sheet at the end of the period (EoP) exceeds the balance sheet at the beginning of the period (BoP) there is a profit for the period. No other detail information is needed! This idea may be applied in determining the progress of any reporting entity, and this same idea may be applied for ALL capitals in the socio-enviro-economic system as well as simply the capitals associated with a single business.

Thus, the progress of a PLACE is the improvement in the STATE of the PLACE from the BoP to the EoP ... where the STATE of the PLACE is the totality of the Social Capital (Human and Relational), the Natural Capital and the Created Capitals (Physical, Financial, Knowledge, Institutional and Cultural).

Note the idea that ALL the CAPITALS must be taken into account. The way in which the capitals are segmented does not matter when measuring progress.

Efficiency

The modern economy has worked well to generate massive financial wealth for some people but rather little for most people, and this increase in financial wealth has been achieved at the expense of nature and dangerous degradation of the environment.

In the aggregate, SOCIAL CAPITAL has increased, but NATURAL CAPITAL has been seriously degraded. This degradation has been of such a magnitude that many of the systems associated with natural capital are no longer able to maintain a sustainable equilibrium. The modern large scale industrial system is extremely inefficient. It requires an excessive amount of natural capital to enable the growth of social capital.

Because almost all the management focus has been on improving profit performance, the broader issue of socio-enviro-economic system efficiency has been ignored. That is the impact on society and the impact on the environment has been ignored as financial performance has improved.

Performance requires more information. Some activities are more efficient at producing progress than others ... in other words some activities use more resources in order to get progress than other activities.

Many ... probably most ... not for profit performance analysis has a focus on relating resources used to activities undertaken ... essentially the foundation for profit and loss reporting. Whether or not there has been any progress as a result of these activities is usually ignored.

Using Measurements

External Reporting

External Reporting for Compliance

Some organizations are required by law to report on their operations to outsiders according to a prescribed methodology. Mostly the outsiders that are being 'protected' by this reporting are the investors. A requirement to protect the public at large is rudimentary, at best.

Financial performance

Public companies are typically required to report their financial performance according to generally accepted accounting standards which vary somewhat depending on the jurisdiction.

Social and environmental impact

Increasingly there are moves to required the reporting of social and environmental impact, but the methodology for this is not well developed.

Performance Improvement / Management

The data required to manage an implementing entity effectively reflects the same 'facts' but the presentation is very different. The data needs to be presented in a granular way and rapidly so that decisions can be made to improve performance.

Feedback

In a high performance management system there is rapid measurement are quick feedback so that the impact of decisions can be observed and further follow up decisions taken.

Cost and Management Accounting

Cost and management accounting is central to most good corporate management systems. Care needs to be taken so that the data is useful for decision making. Too much data often reduces the effectiveness of the data.

Standard Cost Accounting

One way to reduce the amount of data while still getting value from the information is to use a system of standard costs, and variance analysis. This enables thoughtful decisions to be made about product design and manufacturing processes that do not easily emerge from actual cost accounting.

Units of Account

How measurements are made is important. In science this matter has been treated with great rigor, but in the context of business, finance and society the nature of measurement is anything but rigorous.

Must be better than money

Money is not a good measure because it fluctuates in size. It's size changes in all sorts of unpredictable ways. Its size fluctuates depending on market conditions, and money quantities change depending on market conditions ... an unresolvable circular condition! Trying to express the progress and performance of anything simply by using a money metric cannot work

Three principal reporting metrics

Instead of money as the measure, rather there should be measures that are grounded in the reality of the socio-enviro-economic system. In fact there should be three measures ... that is units of

account ... one for the social dimension, one for the environmental dimension and one for the economic dimension.

Existing subsection metrics

These three main dimensions of the system are comprised of many sub-sections. Many of the sub-sections already have meaningful and rigorous metrics, but the prevailing systems of reporting, there are no relatively simple ways of consolidating all the metrics into a single coherent measure for each of the three main dimensions of the system.

Standard Value Profiles

Standard Value Profiles for Everything

Show Life Cycle Impact

The Balance Sheet for a company tells the history of the company up to that point in time. Projections of the Profit and Loss Account into the future give an estimate of the potential of the company into the future, which can be presented in the form of a Net Present Value.

The Standard Value Profile (SVP) for a product reflects the history of a product all the way through its supply chain in much the same way that a company balance sheet accumulates the story of the company into the current period balance sheet. .

In addition the SVP projects the impact of the product (1) during its use and (2) when it is discarded and goes into the waste chain in much the same way that the Net Present Value of a company is computed by reference to the future flows of profit.

Applications of TVIA

TVIA should be used to account not only for the money profit impact transactions, but also for the impact that there is on society and the environment.

A rapidly growing movement to implement impact reporting has emerged during the past 20 years ... initiatives like the GRI, IR, IRIS, and SASB ... all of which are useful steps forward, but generally they promote more reporting of social and environmental impacts without improving the underlying architecture of the accounting systems.

By integrating the core concepts referred to above into the conventional accounting systems, the essential metrics to make better decision to achieve a better world may be implemented with little or no incremental cost.

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ACTORS

Implementing Entities

Every human being on the planet is in some way an ACTOR that has an IMPACT on what is going to happen to themselves and to everyone else. Most individual human beings are also organized in some way with others, whether it is as part of a family, a community, a company as

True Value Impact Accounting (TVIA) ... Overview

employee, a company as investor, a company as decision maker, a government as citizen, and so on. In the end, it is people that make all the decisions!

ACTORS - PRIVATE SECTOR

Companies

For profit companies are the dominant form of organization for economic activity. The small decisions or millions and millions of people become visible in the performance of the company. This is important, because when companies make good decisions, there is good impact, and when they don't there is bad impact.

People

Investors

Employees / Workers

Consumers / Users

Not for Profits / NGOs

ACTORS - PUBLIC SECTOR

Governments (Executive Agencies / Departments)

Executive agencies of government have both a lot of power and very limited power. The mix depends very much on the country and the laws in place ... not to mention how the laws are applied. Typically they are not managed very well and the use of management information is generally primitive!

Governments (Legislation / Regulation)

The legislative branch of government has a big role in the process of rule making and policy for society, but they usually do relatively little to ensure that the laws and regulations actually do what was intended ... again, the role of management information is very limited if it exists at all.

Governments (Judiciary)

The Judiciary has a role in getting all the actors to follow the law and apply the rules. In some cases this is done very well, and in other jurisdictions the judiciary is very weak and totally ineffective ... often simply by the simple expedient of limiting the budgetary funding for the judiciary.

State Owned Enterprises (SOEs)

In purely technical terms the State Owned Enterprise should be able to perform as well as a private Investor Owned Enterprise, but rarely does. Some of this is because there are some critical government regulations that limit how an SOE may operate, and in some cases the staff

True Value Impact Accounting (TVIA) ... Overview

are recruited for political reasons rather than for technical and management competence. Where the SOE uses government style management systems, the performance is always seriously diminished.

Public-Private Partnerships (PPP)

The hope of Public Private Partnerships is that private ownership, management and money will facilitate projects that are needed for the public at large and for which there is no political appetite to fund and operate as a state initiative ... toll roads and bridges for example. To a large extent this form of organization enables profit for the private parties and high costs for the needy public. This would be clear if such initiatives were accounted for in a clear and transparent manner, but that is rarely the case.

QUANGOS (Quasi Non-Governmental Organizations)

Quangos (a UK idea) have some of the characteristics of the PPP . They avoid some of the limitations of public sector operations, but do not have meaningful private sector incentives and are really neither on thing or another.

EXCHANGE / TRADE

CONVENTIONAL MONEY / CRYPTOCURRENCIES

Conventional modern money

Though money has been a key part of economic life for thousands of years, in recent times conventional modern money has taken on roles for which it was never suited.

Money facilitates trade and exchange, and that is a very important and useful role. It is well suited for this.

In recent times, however, money is being used as a measure of wealth and economic activity, as well as being considered a store of value (something at which it fails miserably) and a means of controlling economic performance. Money is not well suited for any of these functions.

Conventional modern money is not value based and is not 'backed' by real value, but the 'trust' of the issuing entity. In the case of the United States, it is essentially 'trust' in the Federal Reserve Bank ... and perhaps also a belief that the economy of the United States will not and cannot crash and descend into an uncontrollable economic collapse.

In the past money was 'backed' by something of tangible value ... gold or silver, for example. This limitation was phased out and conventional modern money no longer has this backing but is only as valuable as the trust there is in it and the willingness of others to respect it.

Complementary currencies

Most conventional modern money is controlled by national governments or the national banking system and central banks. Complementary currencies are something like money that aim to help stabilize or stimulate economic activity where conventional money and monetary policy is failing. Most of these initiatives have been very modest in scale, but a few have become significant.

The *Wir* in Switzerland has been a complementary or alternative currency since the 1930s and has functioned very effectively to moderate economic swings. There have been times when more than 20% of Swiss economic activity was carried out using this alternative currency.

Cryptocurrencies / Transmittal of Value

Modern technology is now enabling a new form of money, and new ways to make transactions and transfer 'money'. Cryptocurrencies are being developed using blockchain technology that makes it possible to make contracts and exchanges without the need for an intermediary like a bank. This has the potential to be very disruptive, but it is not yet clear whether this will enable a better world or one that merely changes the way transactions are done and enables even more concentration of economic wealth.

Value based cryptocurrency

A value based cryptocurrency has the potential to have the advantages of trusted money and transactional efficiency. As an integral part of a multi-dimensional socio-enviro-economic system value based In cryptocurrencies can be used not only to provide credit liquidity for potentially profitable initiatives but also for everything that has potential to deliver social value and the potential to deliver environmental improvement.

Conventional lending practices by banks and other funders has limited funding to initiative that generate profit and cash flow, making investment for good at scale impossible. Conventional thinking about public finance and associated debt limits has had the same effect.

Financing should be constrained by potential not by the availability of money and the demand for profitability. This can be possible with value based cryptocurrencies that are issued based on the potential to progress society or the environment just as conventional financing became available when there was profit potential.

Financing using True Value CryptoCoins

Banks are able to 'create' financing when there is the potential for profit and they loan funds to finance a project. There are limits to how much of this created financing that can be done, but with central bank cooperation, the amounts are essentially limitless.

In conventional financing, projects that only do 'good', whether it is social or environmental but do not create profit can only be financed through grants from government or from philanthropy. The amounts are very limited and quite inadequate for the scale of the issues in society and related to the environment that need to be funded.

A TrueValue Cryptocoin for Social Impact could be made available for projects that need financing to do Social Good

A TrueValue Cryptocoin for Environmental Impact could be made available for projects that need financing to do Environmental Good,

In each case the TrueValue CryptoCoin would be limited by the potential of the project and the intrinsic value of the coin would be a function of the Good that is realized as a result of the Cryptocoin funding.

This is almost exactly what banks do when they loan funds to finance a for project profit ... but with the TrueValue CryptoCoin this is applied more broadly to Social Capital and Natural Capital rather than being used simply to augment Financial Capital.

Transactions / Point of Sale

True Value Impact Accounting (TVIA) ... Overview

Transactions are perhaps the most important part of the socio-enviro-economic system. This is when the critical 'To Buy or Not to Buy' decision gets made, which in turn determines everything else that actually happens.

POS is when this critical 'to buy' or 'not to buy' decision gets made and where POS technology makes it possible for the customer to pay for the goods and services in a very easy manner, and for the selling organization to manage its inventory. The selling organizations and the financial intermediaries are fully informed about the transactions, the customer hardly at all.

In a better arrangement the customer would be in possession of much more information about the goods and services being acquired and the impact these have had up to the POS and the impact expected during use and in the post use waste chain.

In conventional settings the customer has little information about the product beyond the price, what advertising has promulgated and the presentation packaging. A better arrangement would give the potential customer access to an independent standard value profile for every product.

PERSPECTIVES

What things look like depends a lot on where one is standing.

PLACE

ORGANIZATION

EMPLOYER / EMPLOYEE

PARENT / CHILD / GRANDPARENT

PRODUCT

PLACE

Where everything happens

WHAT IS A PLACE

PLACE is where everything happens. PEOPLE live in a PLACE, and work in a PLACE and spend their time in a PLACE. All the SECTORS are needed in a PLACE so that the PRODUCTS (goods and services) that PEOPLE need are available. ORGANIZATIONS need to be in a PLACE both to deliver PRODUCTS but also to provide jobs for PEOPLE.

METRICS for STATE of the PLACE

The STATE of the PLACE is the totality of all the CAPITALS of the PLACE. That is the natural capital, the human and social capital and all of the created capital, that is created physical capital, created intangible capital and created financial capital.

The impact of these CAPITALS on a PLACE depends to a great extent on the ownership of the CAPITAL and where the owner is domiciled and how the owner deploys the capital.

METRICS for PROGRESS of the PLACE

The PROGRESS of PLACE is determined by considering what the STATE of the PLACE was at the Beginning of a Period (BoP) and what it is at the End of a Period (EoP). The STATE of the PLACE is the totality of ALL the CAPITAL of the PLACE.

True Value Impact Accounting (TVIA) ... Overview

Measuring PROGRESS is very much easier and less costly than measuring performance. Progress only requires looking at two STATES separated in time, without any need to look at the multitude of activities and transactions that have caused the changes.

In order to PLAN and IMPLEMENT improvement in STATE, then there is a need to measure and understand the activities and transactions and to improve those that can be improved at least cost.

ALL THE CAPITALS OF THE PLACE

NATURAL CAPITAL

Location / Physical geography

Land / land use

Water

Air

Ecosystems / Biodiversity

Climate Systems

HUMAN CAPITAL

Population

People problems

People Potential

SOCIAL / RELATIONSHIP CAPITAL

Community

Support systems

Civic organizations

CREATED PHYSICAL CAPITAL

Roads and bridges

Residential buildings

Commercial buildings

Industrial buildings

Water and sewer

Electrical grid

Communications infrastructure

Schools / universities

Hospitals and clinics

CREATED INTANGIBLE CAPITAL

Governance of the place

Knowledge

Education

Schools / universities

Hospitals and clinics

True Value Impact Accounting (TVIA) ... Overview

Skilled workforce

Management knowledge for the place

Organizations that provide services (for profit)

Organizations that provide services (not for profit)

Organizations that provide employment

Banking and financial services

CREATED FINANCIAL CAPITAL

Debt of the place

Financial assets of the place

How much financial wealth

Who owns the financial wealth

Who controls the financial wealth

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Advertising

True Value Impact Accounting (TVIA) ... Overview

Advertising is all about selling stuff. Advertising is bought by companies that use advertising as a way to get customers to buy more goods and services. Advertising is all about what is good for the selling company, and little or nothing about what is good for the customer.

Big Companies (Public/Quoted)

Big Companies (Private)

Big Companies (State Owned Enterprises)

Public Private Partnerships

Small Companies (SMEs)

Not for Profits / NGOs

Governments

Individuals

Families

CO

Products

Processes

Investment Portfolios

About PROCESS / FLOWS

The Efficiency of Processes

The efficiency of the socio-enviro-economic system is determined more than anything else by the efficiency of the processes.

Engineers and scientists understand the concept of efficiency as the achievement of the most result for the least consumption of resources.

Corporate investors have tended to use the growth of profit as being an indicator of efficiency, and while it may be a good proxy for the efficient use of corporate resources, it is completely inadequate as a proxy for the efficiency of the socio-enviro-economic system as a whole.

In the modern socio-enviro-economic system there are thousands and thousands of processes, all of which use resources and have impacts that change capital.

In order to have a better world where people have a better quality of life AND the impact on the environment is sustainable AND created capital is not destroyed, then processes have to be much more efficient with respect to all of this than the processes are at the present time.

For most of the industrial era there was a focus on technology (by sector) and organizations as the drivers of the economy, yet for much of history it was the PLACE that seems to have been the driver and where everything came together.

And in the field of international development assistance it has been projects designed with a focus on sector that have been the main modality, yet it has been places where people lived and needed assistance, but not in respect of one sector, but for every sector of the economy ... for every sector of their life.

Accordingly, PLACE should be the subject of analysis to understand PROGRESS and PERFORMANCE and to be able to understand what are some of the steps that would improve the PLACE so that PEOPLE are able to sustain a better quality of life.

Cities (Residential)

Cities (Commercial)

Cities (Industrial)

Cities (Tech/Innovation)

Cities (Slums)

True Value Impact Accounting (TVIA) ... Overview

Suburban Sprawl

Rural areas

Small rural communities

Conventional double entry money profit accounting is very powerful and is at the center of the management information systems used by every well run company. The profit performance of the corporate organizations has been enhanced by this management regime, while the impact on society and the environment has been a very much lower priority, if a priority at all.

Financial Capital -v- ALL the Capitals

In conventional financial accounting the focus is on the financial transactions and the impact on financial capital.

In TVIA there is a focus on ALL the Capitals.

The 'capitalism' practiced for the past more than 200 years has been a capitalism that has had a singular focus on financial transactions and the associated financial capital or financial wealth. In TVIA the impact, or changes, in all of the capitals are taken into account.

The critical issue is that ALL the capitals are taken into consideration. Exactly how the capitals are segmented and described matters less than the idea that it is ALL of the capitals that are taken into account.

What Priority for Impact?

Since the advent of the capitalist era the priority has been to maximize profit and financial wealth ... that is financial capital. The impact on other capitals has been ignored.

TVIA is based on the fundamental idea that people are the most important part of the socio-enviro-economic system and it is the betterment of people that should be the top priority.

Secondly, that the nature and the environment are absolutely essential to human life as we know it and the remediation and sustainability of the environment should have a high priority.

Thirdly, that there is all sorts of created capital that has resulted from human ingenuity and is the foundation for much of people's modern quality of life, and at the same time also responsible for much of the environmental problems that have emerged. While there is rather little that can be done about human nature and the systems of the natural world, every effort should be made to improve everything that has been created by humankind.

For most of history ... millions of years ... activities were limited by human strength and stamina, and life was short. The population was small and the impact on the environment inconsequential.

But people had brains and over time created better ways of doing things, and invented tools and better materials. Quality of life improved, but the environment in the local place became stressed and more space was needed to sustain the improvements. People migrated to access more land.

True Value Impact Accounting (TVIA) ... Overview

Eventually some places had more people than nature and the state of invention would support ... as in Europe for several hundred years starting around the 15th century. The New World provided new land, and once again people were able to thrive rather than starve.

And with the industrial revolution it became possible to have production of goods and services like never before and eventually enough of these things for everyone ... though not enough money for people to buy the things!

For all the period since the beginning of the industrial revolution and the parallel development of financial capitalism, the socio-enviro-economic system was optimized for maximum profit growth ... and for around 200 years there was a strong correlation between more profit and GDP growth and a better quality of life for the population at large.

And then there was the start of a significant disruption with many causes. By the 1970s productivity had improved so that there was much more production capacity than there was buying power to acquire and consume the products, and the OPEC oil cartel succeeded in raising the price of crude oil from around \$3.50 a barrel to \$13.50 a barrel.

US industry which up to then had been internationally competitive paying high hourly wages and ultra low energy prices now became uncompetitive and unprofitable. In order to solve the profitability crisis there was downward pressure on wages and upward pressure on prices. This translated into recession and inflation ... sometimes referred to as stagflation ... and prime interest rates aimed at stopping inflation exceeding 20% ... and failing.

President Nixon set the stage for the US private sector to recover by reestablishing diplomatic relations with China, and President Reagan made it more difficult for labor unions to resist changes in the way business operated. During the 1980s there were major changes in supply chains as US manufacturing sources were replaced by Chinese and other low wage suppliers.

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Heading 6 (12pt)

organization. There is an implicit assumption that the organization performing well means that society and the economy is performing well, yet there is no natural law upon which this can be based. Maybe for the economy of the 18th and 19th centuries this might have been true, but by the latter parts of the 20th century conventional money profit accounting performance measurements and increased productivity meant that this assumption was no longer valid.

Rather in MDIA, the primary focus is on the performance of society and the economy as it affects people. The underlying idea is that the purpose of all economic activity is to improve the quality of life of people. The MDIA approach makes it becomes possible to optimize every aspect of society and the economy so that quality of life for people is improved to the maximum extent possible.

A central idea of MDIA that the purpose of economic activity is to improve an individual's quality of life is quite simple, but in practice the concept rapidly becomes complex for a variety of reasons, all of which should be taken into consideration, for example

- the improvement in one individual's quality of life must not come at the expense of someone else's quality of life;
- an individual having more 'stuff' must not create unacceptable stress on the natural environment;
- a corporate organization may be able to make more profit, but the company performance should be judged not only on the profit, but also on the impact of a set of externalities including the following:
 - impact on people;
 - impact on the natural environment caused by resource depletion;
 - impact on the natural environment caused by environmental degradation;
 - impact on the built environment;
 - impact on the enabling environment; and
 - impact on the knowledge environment.

In order for MDIA to be practical, there has to be an easy and rigorous way for quality of life to be quantified. This may be accomplished by having the value of everything that matters recorded in a database that is universally accessible.

An individual's quality of life is affected by many factors. Throughout the MDIA framework there is both the 'State' and 'Activities' where 'state' is something like a business balance sheet and 'activities' are something like a business profit and loss account.

True Value Impact Accounting (TVIA) ... Overview

In the MDIA approach, progress is the improvement in 'state' over a period of time. Just as in a corporate balance sheet, the valuation of different elements in the balance sheet will change the 'state' and also change the progress and performance.

The 'state' of a person at any moment in time is everything that has been accumulated over time that is now having impact in the present, and will affect the future, together with a large set of things that will possibly happen in the future, and should be taken into consideration today.

Having an education or not, is something that happened in the past and now has a certain value in the present. At the same time, the opportunity to use the education in the future is a factor from the future that has an impact on the situation or 'state' at the present time.

These are the elements that impact the 'state' of a person, and a person's quality of life:

- Parenting (received)
- Parenting (given)
- Education (received)
- School choices
- Subject choices
- Experience
- Skills development
- Lifestyle choices ... impact on wellness
- Preventative medicine
- Family choices
- Friend choices
- Food and nutrition
- Alcohol
- Drugs
- Tobacco
- Career choices
- Spending choices
- Investment choices
- Location choices
- Entertainment choices
- Job opportunities

The elements that impact quality of life are many, and they interact in multiple ways that change over time.

True Value Impact Accounting (TVIA) ... Overview

Everything may be wonderful, and then something happens and the state of health deteriorates, at which point all the other positive attributes no longer have much influence of the resulting quality of life 'state'.

True Value Impact Accounting (TVIA) ... Overview

The main elements of an individual's state

These are the main elements of the 'state' of the individual., Not only are there many elements that go into the making of quality of life, but they are also interrelated in complex ways:

- Personal situation
 - Happiness
 - Lack of stress
 - Position in the family
 - Spiritual security
- Happiness
 - Spouse, partner
 - Children
 - Parents
 - Extended family
 - Friends
 - Enjoyable work
 - Little financial stress
 - Little health stress
 - Appreciation of music
 - Appreciation of dance
 - Appreciation of art
 - Appreciation of food, wine
 - Appreciation of sport
 - Appreciation of travel
- Stress
 - Immediate issues ... health
 - Immediate issues ... water
 - Immediate issues ... food
 - Immediate issues ... money
 - Immediate issues ... employment
 - Concern about the future ... financial
 - Concern about the future ... old age care

True Value Impact Accounting (TVIA) ... Overview

- Growing up ... impact of the past
 - Parenting
 - Home
 - Family and friends
 - Education
 - Healthcare
 - Food and beverages
 - Sport
 - Culture
 - An individual's choices
 - Experiences
- Family
 - Home ... shelter
 - Parenting
 - Food security
 - Water security
 - Energy security
 - Shelter
 - Clothing and stuff
 - Family friends
- Community
 - Access to jobs
 - Access to goods and services
 - Access to recreation
- Financial security
 - Income
 - Wealth
- Job opportunities
 - Economic activities
 - in the community
 - in commuting distance

True Value Impact Accounting (TVIA) ... Overview

- Education, skills and knowledge
 - During growing up
 - Lifetime learning
- Wellness ... good health
 - During growing up
 - Lifestyle choices
 - Access to healthcare
 - Genetics
 - What the future holds
- Access to infrastructure
 - that gives access to transport
 - that gives access to energy
 - that gives access to goods and services
- Enabling environment
- Opportunity
 - a function of education
 - a function of skills
 - a function of available jobs
- Consumption of stuff
 - an individual's buy or not to buy decisions
- Access to entertainment

Quality of life in the present is affected by what has happened in the past, by the situation at the present and by what will be possible in the future. This adds complexity to the model, but also makes the model more meaningful.

In MDIA everything revolved around the idea that progress is the change in state from the beginning of the period to the end of the period.

When there is no change in state between BOP and EOP, there is a stable situation that may or may not be desirable, and the cause may be because the state is not subject to change, or that there have been substantial activities, but still no change. There are situations where it takes a lot of activity and effort to sustain a constant state.

For people, State is a measure of quality of life. There are hundreds of separate issues that go into an individual's quality of life. Change in state from the beginning of a period (BOP) to the

end of a period (EOP) is a very useful measure of progress and improvement (or deterioration) of quality of life.

It is possible to have a quantifiable change of state or a change in quality of life without having any knowledge about what caused the change.

It is also possible to have a substantial activity with a lot of cost, and no measurable change in the state and change in the quality of life. Understanding what causes little progress with big expenditures is a challenge, and is most effectively resolved by management analysis rather than using statistics. In most cases the reason for poor performance in complex systems is that there are one or more critical constraints still active that need to be addressed. This is difficult to identify using statistical method, but is very often easy to see when there is a management that understands the activities and observes the details.

I used to call this 'management by walking around'. Early in my career I attended a training session on 'observation and perception' which really opened my eyes. Many solutions are obvious if only staff and decision makers would be more observant

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Contact information for Peter Burgess: Founder / CEO ... TrueValueMetrics

Website: <http://truevaluemetrics.org>

Email: peterbnyc@gmail.com

Skype: peterburgessnyc Twitter: @truevaluemetric

LinkedIn for Peter Burgess : www.linkedin.com/in/peterburgess1/

This paper as PDF: <http://www.truevaluemetrics.org/DBpdfs/BMABusiness/TVM-MDIA/TVM-MDIA-Brief-131107b.pdf>

... products like food, and clothes and all the other goods and services that go into quality of life and standard of living.

Physical Capital includes buildings. There are many types of buildings including:

- Residential buildings: houses, apartments, etc.
- Commercial buildings: offices, shops, shopping centers, etc.
- Industrial buildings: factories, warehouses, etc.
- Community support buildings

Physical Capital includes machinery and equipment:

- Transport: Trucks, trains, cars, buses, ships, aircraft
- Production: Iron and Steel, Pulp and Paper; General Manufacturing; Automobiles, Shipbuilding, Chemical Plants, etc.
- Electric power generating systems.

Physical Capital includes infrastructure:

- Roads and bridges
- Railroad permanent way
- Water and sewer systems
- Electric power grid
- Airports / Seaports
- Recreation

Physical Capital also includes working capital ... the product that people have to have in order to satisfy basic needs and more to deliver a good quality of life.

During the past 150 years there has been amazing progress in the design and deployment of engineered structure and products. However ... but investment flows in many parts of the world

True Value Impact Accounting (TVIA) ... Overview

are inadequate to maintain physical capital, and much of existing physical capital and especially infrastructure is old, badly maintained, inefficient and in some cases just dangerous.