



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Draft dialog for Left Forum panel Version B

SECTION 1 - INTRODUCTION

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It's going to be a conversation ... rather informal. John Kiehl has the job of keeping this on time and on track.

A lot to cover, so we will be going quickly. Please ask questions.

SECTION 2 – COST VERSUS TRUCOST

BOTTLED WATER

The trucost of your bottle of water.

The money cost of a bottle of water is \$1.00.

Actually this is the price.

Be careful about the difference between cost price and value

And in this context cost is only the money cost.

The trucost is a blend of both money cost and the impact on people and planet (the triple bottom line elements) all the way through the supply chain, the use period and the post use waste chain.

\$1.00 is the price to you

\$70 cents may be the price to the retail establishment.

Profit is a big number

The money price/ cost of the water in the bottle is very little

There are both money costs and trucosts associated with the bottle and bottling

There are both money costs and trucosts associated with transport of the bottles

There are trucosts associated with the post use waste chain.

This bottle contains water

This bottle contains the amount of oil (petroleum) that has gone into making this.

In conventional accounting this is the main formula:

$$\text{profit} = \text{revenues less costs}$$

In truevaluemetrics and multi dimension impact accounting (MDIA) the equivalent formula is:

$$\text{valueadd} = \text{truvalue less trucost}$$

or

$$\text{valueadd} = \text{truvalue created less truvalue consumed}$$

This bottle has a price of \$1.00.

In this country each person consumes more than 200 bottles a year.

The total revenue to the bottle water industry is in excess of \$20 billion

The good news is that this industry does employ some people in the supply chain and in the transport and distribution.

Also the conventional accounting money profits are huge ... which explains why the industry has grown so fast and all the big name beverage brands sell bottled water ... and this makes investors happy.

The bad news is that about 17 million barrels of oil are consumed by this industry in the supply chain making the bottles (PET plastic ... polyethylene terephthalate) and doing the transport.

Oil is not an infinite resource ... use of fossil fuel depletes resources. (Note that in conventional accounting the depletion of fossil fuel resources is not included in the accounting.)

The use of oil as a fuel produces greenhouse gas emissions ...

The use of oil to make plastics produces non bio-degradable waste that has a life longer than radioactive nuclear waste!

As a practical matter very few disposable bottles get recycled. They end up in landfills, along the side of roads, in rivers and in the oceans. A lot of waste plastic ends up in the stomachs of big fish and whales.

The truvalue of this bottle of water is about the same as a glass of water from the tap.

The trucost of this bottle of water is about 500 units which compares with the trucost of a glass of water from the tap of around 10 units.

At the moment we don't compute trucost and truvalue ... and as long as it is not being computed it is not going to be used.

The big driver of this industry is that fact that people seem to be willing to pay \$1 for something that is mainly profit.

A BOTTLE OF SODA

The trucost truvalue situation with a bottle of soda is even worse.

Just plain old water would be a better way of quenching thirst, but it doesn't have the interesting taste that there is in soda.

For all practical purposes young people are addicted to soda. Part is the taste and part is the sugar content.

A certain amount of sugar is important for good nutrition. But the amount of sugar in a 2 liter bottle of Coca Cola is about 2 cups ... actually 140 grams which is the same as about 20 tablespoons of sugar.

What is the impact of sugar on quality of life?

What is the cause of a growing amount of obesity in the population of rich countries over the past 60 years and in the population of poor countries in the past 20 years? There is a growing consensus that sugar is a big part of the cause.

What is the value of instant feel good gratification compared to the health effects in future years?

Obesity has a variety of health effects, and in the end, obesity reduces expectation of life. The present value of a reduction in life expectation is a very large number. We come back to this when we talk about quantification of value

Everyone knows the story of tobacco ... a story that is still playing out in parts of the world where education is compromised and tobacco companies can do pretty much what they want.

Sugar has many of the same characteristics as tobacco. People like the product ... and the health effects are not obvious until it is too late.

What is the trucost now of a future problem?

We have not been well served by the economic or financial calculation that the present value is achieved by discounting the future ... a calculation that has been taught in business schools for generations of students.

Rather we should be discounting the present, because in the future it will be too late!

SECTION 3 – WHAT IS MDIA? HOW IT WORKS?

PURPOSE OF MDIA ... HOW MDIA WORKS

The purpose of MDIA is to help to change behavior in ways that are going to be good for individuals, good for society and good for the planet.

- Knowledge is power
- We manage what we measure
- If we change the way the game is scored we change the way the game is played

Conventional accounting is very powerful. It is used in every business organization on the planet, and a primitive version of conventional accounting is also used in every government entity on the planet. Conventional accounting is only about money based transactions, everything else is ignored.

MDIA expands on the very powerful concepts of conventional accounting ... specifically, the double entry construct and the idea of balance sheet and operating statement ... to include the impact on people and planet.

Impact, like the operating statement (profit or loss) may be beneficial or detrimental.

FRAMEWORK for analysis

The purpose of all economic activity is to maintain and improve the quality of life of people. People are therefore the central element in MDIA analysis. People are at the top of everything.

In the MDIA analytical framework, the foundation for everything is what the planet has to offer ... nature's bounty. It is amazing, it is huge, but it is finite. It is resilient, but it is also fragile. The life on the planet has evolved over billions of years, but it might not survive very much longer!

The reason is that in the last few millennia there have been huge changes in the man made constructs that may now be seen everywhere on the planet. People have built organizations and physical structures that enable amazing things to be done. It is amazing, it delivers a better standard of living than we have ever had before ... but in doing so there is depletion of resources and all sorts of environment degradation.

The agricultural revolution and the industrial revolution have been great successes ... but they are not sustainable.

CONVENTIONAL ACCOUNTING

Conventional accounting has a singular focus on business profit, and the associated cost accounting and management information systems that give incentive to business efficiency.

The result has been increased productivity that has been used to increase profits and in turn stock prices and the wealth of investors or owners.

MDIA expands on conventional accounting so that the process of optimization is not only for maximum profit, but also good impact on people and the minimum of bad impact on planet. (maybe even some good impact on planet).

A characteristic of MDIA is to make the most possible use of existing data, and to do it in as simple a way as possible and at least cost.

PAYROLL

Every business has payroll. The money side of payroll flows through the accounts.

In conventional accounting the payroll is a cost. Reduce the payroll and the profits go up.

Improve productivity, reduce the payroll ... and the profits go up.

Reduce benefits, reduce wages ... and the profits go up.

You get the picture.

PEOPLE BENEFIT FROM PAYROLL

When a person is employed, the wages are used to sustain and improve the quality of life and the standard of living of the individual.

When a small wage becomes a bigger wage, quality of life and standard of living are improved:

- for the individual
- for the family of the individual; and
- for the community where these people live

For the individual this is a 1 to 1 relationship.

For the family it is about a 1 to 1 relationship

For the community there is a multiplier ... the local multiplier, which is likely to be somewhere between 2 and 10 depending on the community.

Taken together an increase in payroll of (say) \$20,000 results in a people benefit increment of around 5 times of \$100,000. This is good.

The problem is that a decrease in the payroll of \$20,000 results in a decrease in people benefit for the same \$100,000 ... and this is bad.

As profits have gone up, and payrolls have gone down, the impact on people has been awful. Conventional accounting does not bring this into account. MDIA brings this into account.

OUTSOURCING

Using conventional accounting analysis, outsourcing is a very good business practice. Reduce the payroll in the USA but outsourcing to a manufacturer in China, and the company's profits go up. At the same time the former employees and their families and their communities go down.

In MDIA analysis there is both the profit measure AND the people/society measure.

ENERGY COSTS

Energy costs flow through the conventional accounting system. Decision makers look at energy costs and will do what it takes to reduce the money costs of energy.

In many cases, in order to reduce energy costs, there have to be investments in order to use an alternative source of energy. This does not get done unless the return on investment (ROI) is higher than some threshold return.

MDIA analysis incorporates the impact on people and planet into the calculation.

Energy costs are a function of many things:

- the characteristics of the buildings;
- the characteristics of the processes;
- transport types and distances
- the behavior of people;
- the energy conversion systems (boilers, heat pumps, air conditioners, etc.); and
- the fuels.

Much of the data about energy use is to be found in the money accounting transaction information. The challenge is to convert it to a simple way of presenting in understandable summary form, a lot of quite complex detail.

PRODUCT

The purpose of MDIA is to help to change behavior in a direction so that people are better off and the planet is less stressed.

Quality of life and standard of living depends to a large extent on the flows of PRODUCT.

Stress on the planet is also a function of the type and quantify of PRODUCT.

This should mean that better decisions around PRODUCT will give better results. Getting better decisions will happen when there is better information about products for decision making.

In the business world, companies know a lot about their supply chain, but it has been almost entirely about the impact of the supply chain decisions and operations on the profit performance of the business.

Better quality, more speedy delivery, lower prices have been the measures that have driven supply chain decisions.

The fact of low wages and dangerous workplace conditions, inefficient use of resources and environmental pollution have not been part of the decision making process for the supply chain until quite recently. Media attention to all sorts of abuses in the supply chain has made it imperative for companies to worry about reputational damage to their brands.

MDIA is a way for these concerns to be quantified in a routine manner and for the information to be available so that better decisions may be made by customers with respect to any product.

Companies have been very adept at the PR needed to build brands and to maintain their reputation. This may or may not be supported by MDIA style analysis.

PLACE

Conventional business accounting has a singular focus on the organization. MDIA, on the other hand has a broader view.

An economic activity may be run by an organization, but it is located in a place, and it has impact on people and it has impact on resources and the environment.

The state, progress and performance of a place results from many things, including the economic activities that are located in the place.

Quality of life and standard of living depend to a large extent on the place.

All of the ideas that are applicable in using MDIA in the organization may be transferred into the analysis of the place.

The important thing about place is that a place has permanence.

In the analysis of place, the balance sheet or 'state' is relatively easy to put on the record, and the changes are relatively easy to track.

When there is an improvement in the state, what change in the activities of the place were the cause of this change?

Conversely, when there is a deterioration in the state, what was the cause of this. This type of analysis is now starting to be used in monitoring health at the community level, and in turn identifying the early onset of disease.

PEOPLE

With people at the center of everything ... appropriate metrics are needed to understand the 'state' of people and progress towards a better ... quality of life and standard of living.

Everyone is different. One size does not fit all!

The MDIA framework allows for meaningful metrics with a huge amount of flexibility that has respect for the complexity of people, and the society and the economy and the natural world that is the surrounding reality.

Above all else, from the human perspective, life is the most valuable thing there is.

Quality of life depends on a lot of factors all of which are interconnected in a huge variety of very complex ways.

When a baby is born, everything is potential ... everything is in the future.

When a person reaches a ripe old age, not so much is potential and in the future, almost everything happened in the past, and exists as experience and memories.

Many things go into quality of life:

- Your country, your community, your family;
- Yourself, your character, your attitude to life;
- Your health, your wellness, your expectation of life;
- Your wealth, your income, your economic opportunities;
- Your education, your skills, your experience;
- Your interests, your abilities, your access to the arts, access to sport, access to recreation;
- Security;
- Access to food and water;
- Shelter;
- Good governance, justice;
- Access to infrastructure;
- Access to goods and services.

RISK

Risk is incredibly important, but not well understood.

As a Brit, I would observe that Lloyds of London understood the concept of risk. They made a business out of it, and in turn made it possible for British merchants to operate very effectively and essentially build the British empire.

In contrast, in the modern day, business, banking and policy leadership does not seem to understand risk very well and as a society we are faced with a situation where business takes the risks and pockets the profits, until there is a hit, at which point it is society that has to pay the bills to clean up the mess.

We know about some of the risks ... high profile ones that have hit the headlines:

- Recently the GM ignition switch fiasco
- The BP oil spill
- Antibiotics in meats
- Climate change
- RISK associated with unemployment, underemployment and underpaid employment
- Toxic chemical spill in North Carolina that polluted drinking water systems

What about the risks associated with fracking:

- What happens when groundwater is compromised by some of the toxic chemicals used in the fracking process.
- When a very big company has to handle a risk gone bad, there are resources to handle the problem ... but what happens when the company is relatively small, goes bankrupt and society is left carrying the costs. There are thousands of small drilling companies doing this work, and none of them have anything like the financial strength to handle the potential risks involved.

What about the risks associated with greenhouse gas emissions:

- What amount of climate change may we expect? What damage will be done by a different climate regime ... more drought, more turbulent weather, etc.

What about the risks associated with other forms of environmental degradation:

- Land fill
- Loss of barrier islands
- Loss of wetlands
- Fertilizer, pesticide and herbicide runoff from agriculture
- Industrial detritus ... brownfield toxins
- Loss of forest
- Loss of biodiversity

UNIFORM, UNIVERSAL QUANTIFICATION

The present state of metrics is unsatisfactory for two reasons:

- Conventional accounting ignores all the externalities; and
- Emerging metrics to account for and report on externalities are complex and difficult to use.

MDIA uses a uniform and universal system of quantification.

The system has its origins in corporate cost accounting, where standard costs are used to make cost accounting relatively easy to use while retaining most of the analytical power of the cost information.

Specifically, MDIA uses a system of standard values. How does this work?

A product has a cost ... from the money accounting

A product has a price ... from the market

A product has a value ... the MDIA standard value

Typically cost and price are expressed in money terms

Value is expressed in value units ... which are not immediately equivalent to money terms.

There are thousands and thousands of different measures used to express technical operations in engineering terms ... each of these translates into MDIA standards.

While it would be nice to have a single value unit ... and this may come in time ... at this stage in the development of MDIA we are using three different standard value units:

- A value unit related to people and quality of life
- A value unit related to resource depletion and some aspects of environmental degradation
- A value unit related to land use and its role in delivery of bio environmental services (BES)

PEOPLE ... QUALITY OF LIFE

The 'base' for the value unit related to quality of life is the idea that a new human life ... a new born baby ... had a value of 1 million units. This is not \$1 million ... it is 1 million units.

As life progresses, this 'value' changes depending on all of the factors that we have referred to before.

For many young children fortunate enough to be born in the USA, it may be expected that the 1 million will increase during their lifetime, and then decline towards life's end.

For people living today in a place like Syria, the value of life is diminished by the awful state of violence, insecurity, lack of essentials, and lack of everything.

The people state in Syria would be normally 22 million people times 1 million units or a total of 22 billion units

As it is, the people state in Syria is diminished by the number of refugees who have migrated out of the country ... 2.5 million. So the population is 19.5 million. All of this population is in a situation of extreme insecurity, access to goods and services I limited, access to health compromised, access to education compromised, access to economic opportunity is compromised. Some 6.5 million of the people are described as internally displaced . While the normal basis value of life may be 1 million units, for people in Syria it is maybe 200,000 units for a total value of 19.5 million times 200,000 which is 3.9 billion units

The loss of people value because of the civil war in Syria is the difference between 22 billion and 3.9 billion units ... or 18.1 billion units.

The value of the man built constructs in Syria have also been diminished because of the state of violence and general mayhem.

- Houses have been damaged and destroyed
- Health facilities have been damaged and destroyed
- Educational facilities have been damaged and destroyed
- Utilities (water, sewer, power, communications, etc) have been damaged and destroyed
- Business facilities for trade and commerce have been damaged and destroyed
- Factories have been damaged and destroyed
- Transport infrastructure have been damaged and destroyed

The money cost of rebuilding is one element of the cost. This may be expressed as a money number.

Another dimension is the impact the loss of the services has on quality of life. This is part of the 18.1 billion units referred to in the people section.

With the MDIA analysis approach, the cost of rebuilding is a money cost. the value of rebuilding is the positive impact the rebuilding will have on the quality of life of the people.

In conventional money profit business thinking, the things that will make profit will get funding for rebuilding most easily and most quickly. With the MDIA analysis, the facilities that will do the most to improve quality of life will have priority.

IMPACT ON RESOURCE DEPLETION AND ENVIRONMENTAL DEGRADATION

There are many ways for resource depletion and environmental degradation to be described. Establishing a common way of quantifying these is needed in order for the issues to be talked about among decision makers who do not have technical background and must make decisions using appropriate summary information.

The per capita carbon emissions in the United States has been calculated at more than 20 tons CO₂e per year. This compares with about 8 tons per person per year in Europe. China is significantly lower at around 5 and India lower still at around 1.5.

A 'base' impact value of 1000 units per ton of CO₂e has been assigned. MDIA will develop a large number of standards for different carbon emitting processes using this base standard.

A massive amount of work has been done at the technical engineering level to describe the various input flows and output flows in all sorts of manufacturing and energy processes.

In contrast only a tiny amount of work has been done to make these data easy to use. This is the work that MDIA is doing.

During the course of the next year many of these standard values will be 'published' for review and comment ... and crowd-sourced to tease out the errors.

LAND USE

The only value assigned to land is the price that is associated with a buy/sell transaction in the money economy. This has functioned very well to help property owners profit from 'development' and been very damaging for most every other form of land use. This business model for the management of land does not work. Everything associated with the natural state is essentially considered to be worthless.

Those that have studied the way nature works have come to the conclusions that everything that exists today has come about built on top of what nature does. The value of this is huge.

So the question becomes ... how to quantify the value of land which is doing nothing except being host to everything and anything that nature needs to sustain life.

A 'base' value of 10,000 units per hectare has been assigned to land that has not been disturbed in any way to support any man-built constructs. A hectare is 100 meters by 100 metres or 10,000 sq meters, and there are 100 hectares in a square kilometer. A hectare is about 2.47 acres.

The value of land increments depending on the role it plays in the bigger ecosystem. Some of the areas that are considered 'worthless' by the real estate world may well be the most valuable in terms of the bio ecology and environmental services that are going on.

The wetlands in the Meadowlands of New Jersey were considered practically worthless in money accounting terms several decades back, and they became the dumping ground for all the urban trash from New York City and other urban communities. Today there is a better understanding that these wetland areas are vital for the life of our oceans.

There is a lot of work to be done to integrate what scientists know about the way eco-systems work and how a system of standard values can work to reasonably reflect the reality ... albeit in a simplified manner.

Remember that what we have at the moment is a system where impact on resources, environment and nature are completely ignored. Even a relatively crude system of standard values will be a huge step forward.

PRODUCT VALUE CHAIN

A product has a cost and a price. The money based cost and price dominates decision making in the supply chain. This results in all the impact on people and planet during the supply chain being ignored in the analysis of financial performance.

All products have a more complex profile that should reflect the history of the product as it flows through the supply chain. The price at any point is made up of these elements:

- Raw materials (their cost and impact profile)
- Energy (cost and impact profile)

- Payroll (cost as well as the benefits arising from payment of wages)
- Use of property, plant and equipment (cost)
- Use of capital (cost ... a benefit to the financial sector)
- Taxes (cost ... an essential benefit for the government)
- Pro good expenditures (cost ... a likely benefit to the community and society)
- Profit (a benefit to the owners)

It was after many years of corporate analysis and then doing some work on 'supply chain analysis' for the World Bank that I started to talk about profit being the biggest single cost in the modern economy.

A supply chain becomes dysfunctional as soon as there is a link in the chain that is not able to make profit. This has dramatic consequences in poor countries, and explains a lot why these economies do not become self supporting.

I argue that for change to happen there has to be improved decision making at all levels of the life cycle of a product. People need to make better 'to buy' or 'not to buy' decisions, and for this the information about the product profile needs to be easily accessible on mobile devices everywhere.

CONCLUSION

There really isn't a conclusion.

There has been progress in the last year. The data architecture described a year ago has evolved considerably.

Big efforts have been made to make the system realistic ... while at the same time being simple.

There are many people around the world watching the evolution of MDIA. This community is starting to engage in ways that are likely to accelerate progress. This will be important as the standard values are quantified and there is a need for very clear technical understanding of what is involved.

Sometime soon there will be mobile access to the emerging standards ... and a way to give feedback about what is right and wrong.

Sometime soon there will be 'games' to engage people who want to be part of the emerging movement to improve socio-economic behavior.

Whether something like MDIA will be able to become an integral part of a value banking system is a question that gets posed from time to time. Maybe that will be the subject for the Left Forum next year.

