Citation:

Muñoz, Lucio, 2020. **Sustainability thoughts 106: Can we solve an environmental sustainability problem by managing the consequences of that problem? If not, why not?**, ***Boletin CEBEM-REDESMA***, Año 14, No.5, May, La Paz, Bolivia.

Sustainability thoughts 106: Can we solve an environmental sustainability problem by managing the consequences of that problem? If not, why not?

By

Lucio Muñoz*

*** Independent qualitative comparative researcher/consultant, Vancouver, BC, Canada. Email: munoz@interchange.ubc.ca**

Abstract

There is an environmental externality problem affecting the sustainability of the traditional market. This sustainability problem has a root cause and it has consequences. Dealing with the root cause requires an environmental sustainability fix, which corrects the cost distortion while taking hold of the consequences. A move far away from business as usual and within perfect green market thinking. Dealing with the consequences requires a sustainable development patch that addresses some of the consequences while leaving the root cause of the environmental externality generation problem untouched. A move within business as usual, but with an environmental face that falls outside perfect green market thinking. The 2012 United Nations Conference on Sustainable development Rio + 20 apparently had chosen the environmental sustainability fix as the way to go in the face of an environmental sustainability problem, but somehow today we see the world using sustainable development tools like environmental externality management. The reasons why before and soon after 2012 United Nations Conference on Sustainable Development Rio + 20 we were pro green markets and pro green economies and pro green growth, and then soon after we are pro non-green market solutions is beyond this paper. Understanding the nature of the green market fix to the environmental externality problem had they continued with it and understanding the nature of environmental externality management market patch being used right now are relevant to this paper and to the academic and policy community as a whole. The discussion above raises the questions; can we solve an environmental sustainability problem by managing the consequences of that problem? If not, why not? Among the goals of this paper is to provide an answer to those questions analytically and graphically.

Key words

Sustainability, traditional market, environmental sustainability, green markets, environmental externality management markets, environmental externality problem, environmental sustainability problem, cost internalization, paradigm shift, dwarf markets.

Introduction

a) The environmental externality problem affecting the traditional market

There is an environmental externality problem affecting the sustainability of the traditional market that arises when we must account for the environmental externalities associated with business as usual, and the structure of this sustainability problem has been recently shared(Muñoz 2020) as described in Figure 1 below:

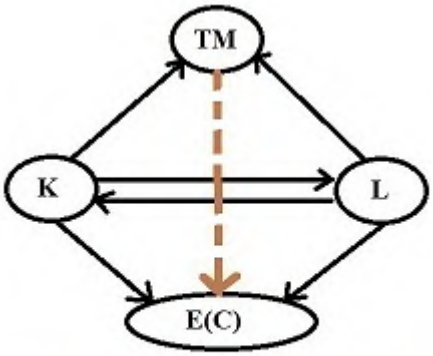

Figure 1 The environmental externality problem affecting the sustainability of the traditional market(TM).

We can see that the sustainability problem in Figure 1 above in general has two components i) there is a disconnection between the traditional market(TM) and the environmental externalities[E(C)] as indicated by the broken brown arrow; and ii) this disconnect leads to production(K) and consumption(L) externalities as indicated by the black arrows from K and L to E(C).

b) Ways of addressing the environmental externality problem

Hence, this sustainability problem has a root cause(the disconnection) and it has consequences(production and consumption externalities). We can use Figure 1 above to indicate the following in specific terms: i) that the root cause of the environmental externality problem is the disconnect between the traditional market price in the traditional market(TM) and the environmental externality[E(C)] as represented by the broken brown arrow; and ii) that production and consumption related environmental externalities[E(C)] are the consequence of that environmental externality problem as indicated by the continuous black arrows from K and L to E(C). Dealing with the root cause requires an environmental sustainability fix, which corrects the cost distortion while taking hold of the consequences. A move far away from business as usual and within perfect green market thinking, a move encouraged by the Brundtland Commission in 1987(WCED 1987). Dealing with the consequences of the

sustainability problem requires a sustainable development patch that addresses some of the consequences while leaving the root cause of the environmental externality generation problem untouched. A move within business as usual, but with an environmental face that falls outside perfect green market thinking. The 2012 United Nations Conference on Sustainable development Rio + 20(UNCSD 2012a; UNCSD 2012b) apparently had chosen the environmental sustainability fix as the way to go in the face of an environmental sustainability problem first, but somehow today we see the world using sustainable development tools like environmental externality management, which is perhaps the wrong green foot to use in order to deal with green market problems(Muñoz 2016) as the price-externality distortion is still in place as they work(Muñoz 2017) and their implementation requires a flip from traditional free market thinking to non-free market thinking so you can make sense of them(Muñoz 2019).

c) The need to understand the nature of the available tools to handle the environmental sustainability problem

The reasons why before and soon after 2012 United Nations Conference on Sustainable Development Rio + 20 we were pro green markets and pro green economies and pro green growth, and then later on we are pro non-green market solutions is beyond this paper. Understanding the nature of the green market fix to the environmental externality problem had they continued with it and understanding the nature of environmental externality management market patch being used right now are relevant to this paper and to the academic and policy community as a whole. The discussion above raises the questions; can we solve an environmental sustainability problem by managing the consequences of that problem? If not, why not? Among the goals of this paper is to provide an answer to those questions analytically and graphically.

Objectives

i) To highlight green market structure that results from correcting the environmental externality distortion present in traditional markets; ii) To share the environmental externality management market structure that results from dealing with the consequences of the environmental externality distortion present in traditional markets; and iii) To compare those two market structures to highlight that dealing with the consequences does not solve the sustainability problem at hand and to stress why that is so.

Methodology

First, the terminology and operational concepts and rules are shared. The structure of the green market is introduced. Second, the structure of the environmental externality management market is highlighted. Third, the two market structures are compared to provide an answer to the question at hand and to indicate why. Finally, some food for thoughts and conclusions are listed.

Terminology

A = active social system a = passive social system

B = active economic system b = passive economic system

C = active environmental system c = passive environmental system

TM = traditional market GM = green market

K = traditional producers/supply L = traditional consumers/demand

GK = green producers/supply GL = green consumers/demand

EEM = environmental externality management M_i = market type i

E(T) = externalization of T I(t) = internalization of t

E(AC) = externalization of A and C I(ac) = internalization of a and c

TMP = traditional market price GMP = green market price

ESG = environmental sustainability gap EEG = environmental externality gap

DM = dwarf market DMP = DP = dwarf market price

DK = dwarf producer/production DK = dwarf consumer/consumption

EEMI = Environmental externality market impact

EEMP = Environmental externality market price = DP

Ti = environmental externality management cost

RESG = remaining environmental sustainability gap

Operational concepts and externalization and internalization rules

<u>i) Operational concepts</u>

1) Traditional market, *the economy only market*

2) Green market, *the environmentally friendly market*

3) Traditional market price, the *general market economic only price or the price that covers the*
cost of production at profit(TMP = ECM + i = P) or zero profit(TMP = ECM = P).

4) Green market price, *the price that reflects both the economic and the environmental cost of*

production or the price that covers the cost of environmentally friendly production.

5) Cost externalization, *the leaving out of the pricing mechanism of the market relevant costs associated with production.*

6) Social cost externalization, *the leaving out of the pricing mechanism of the market the social costs associated with production.*

7) Environmental cost externalization, *the leaving out of the pricing mechanism of the market the environmental costs associated with production.*

8) Economic cost externalization, *the leaving out of the pricing mechanism of the market the economic costs associated with production.*

9) Cost externalization assumption neutrality, *the assumption that production has minimal or no cost impact on external factors to a market model.*

10) Full costing, *the reflecting in the pricing mechanism of the market all cost associated with production; there are no market distortions.*

11) Partial costing, *not reflecting in the pricing mechanism of the market all cost associated with production; there are partial market distortions.*

12) No costing, *not reflecting in the pricing mechanism of the market any costs associated with production; there is full market distortion.*

13) Full inclusion, *all factors are endogenous to the model, there are no exclusions.*

14) Partial inclusion, *some factors are exogenous to the model, there are some exclusions.*

15) Fully independent development choices, *when we have individual development choices unrelated to each other or pure choices such as society only(A), economy only(B), and environment only(C). In this world only fully independent development choices exist so the set = {A, B, C}. This is the world of the Arrow Impossibility theory and theorem.*

16) Partially codependent development choices, *when we have mixed/paired development choices such as socio-economy(AB), socio-environment(AC), and eco-economy(BC). In this universe only codependent development choices exist so the set = {AB, AC, BC}. This is outside the normal world of the Arrow Impossibility theory and theorem.*

17) Fully codependent development choices, *when all development choices are mixed together such as the socio-economy-environment(ABC) model. In this paradigm only fully codependent development choices exist so the set = {ABC}. This is outside the world of the Arrow Impossibility theory and theorem.*

18) Full cost externalization, *all costs associated with production are not reflected in the pricing mechanism of the market.*

19) Partial cost externalization, *some costs associated with production are not reflected in the pricing mechanism of the market.*

20) No cost externalization, *all costs associated with production are reflected in the pricing mechanism of the market.*

21) Full cost internalization, *all costs associated with production are reflected in the pricing mechanism of the market.*

22) Partial cost internalization, *some costs associated with production are reflected in the pricing mechanism of the market.*

23) No cost internalization, *all costs associated with production are not reflected in the pricing mechanism of the market.*

24) Externalities, *factors assumed exogenous to a model*

25) Full externality assumption, *only one component is the endogenous factor in the model; the others are exogenous factors.*

26) Partial externality assumption, *not all factors are endogenous factors at the same time in the model.*

27) No externality assumption, *all factors are endogenous factors at the same time in the model.*

28) Economic externality, *the economic costs associated with production not reflected in the pricing mechanism of the market.*

29) Social externality, *the social cost associated with production not reflected in the pricing mechanism of the market.*

30) Environmental externality, *the environmental cost associated with production not reflected in the pricing mechanism of the market.*

31) Green or environmental margin, *to cover the extra cost of making the business environmentally friendly*.

32) Social margin, *to cover the extra cost of making the business socially friendly.*

33) Economic margin*, to cover only the economic cost of production*

34) Profit, *the incentive to encourage economic activity*

35) Full cost price, *a price that reflects all costs associated with production.*

36) Some cost price, *a price that reflects only some costs associated with production.*

37) No cost price, *a price that does not reflect any cost associated with production.*

38) Circular market illusion, *the idea that production activity can take place without producing relevant externalities.*

39) Circular traditional economy illusion, *the idea that production activity can take place without producing relevant social and/or environmental externalities.*

40) Circular dwarf green economy, *the idea that market prices can be manipulated externally to generate revenue to cover the cost of dealing with the environmental externality they create to close the non-free market cycle dwarf green production-dwarf green consumption-environmental externality.*

41) Circular green economy, *the idea that market prices reflect the cost of making business environmentally friendly in order to cover the cost of dealing with the environmental externalities they create to close the free market cycle green production-green consumption-environmental externality.*

42) Circular environmental externality management based market illusion, *the idea that you can solve an environmental externality problem by dealing with the consequences of that problem, not the cause.*

43) Circular green economy illusion, *the idea that green production and green consumption can take place without having social impacts(E(A) = 0).*

ii) Externalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the externalization rules(E) work as follows:

1) E(A) = a **---→** *relevant social costs(A) are assumed irrelevant*

2) E(C) = c **---→** *relevant environmental costs(C) are assumed irrelevant*

3) E(AC) = ac **---→** *relevant social costs and economic costs(AC) are assumed irrelevant*

iii) Internalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the internalization rules(I) work as follows:

4) I(a) = A **----→** *irrelevant social costs(a) are now relevant*

5) I(c) = C **----→** *irrelevant environmental costs(c) are now relevant*

6) I(ac) = AC **----→** *irrelevant social costs and economic costs(ac) are now relevant*

iv) Model structure and externalization rules

Let's assume we have the following three market structures M1 = ac, M2 = Ac and M3 = AC, then the following holds true:

7) M1 = ac = E(AC) = *a fully irresponsible market as all costs are externalized*

8) M2 = Ac = [I(a)][E(C)] = *a partially responsible market as social cost is internalized*

9) M3 = AC = [I(a)][I(c)] = *a fully responsible market as all costs are internalized.*

v) Reversing externalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the process of reversing externalization-internalization rules works as follows:

The case of internalizing the externality: if E(AC) = ac, the following holds true:

10) I[E(AC)] = I(ac) = AC, internalization-externalization forces cancel each other out

The case of externalizing the internality: if I(ac) = AC, the following holds true:

11) E[I(ac)] = E(AC) = ac, externalization-internalization forces cancel each other out

The structure of the green market(GM)

Addressing the root cause of the environmental externality generation problem requires the internalization of the relevant environmental externality costs[E(C)] associated with economic activity in the pricing mechanism of the traditional market price(TMP = P) shifting it that ways towards green market pricing(GMP = GP); and therefore shifting the traditional market towards green markets(GM), creating the structure shared in Figure 2 below:

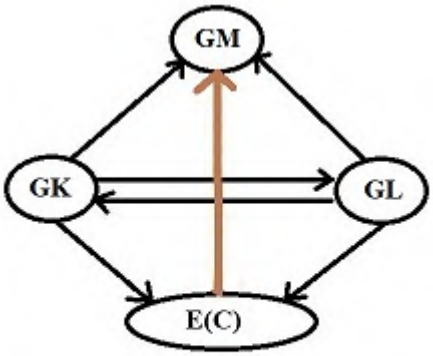

Figure 2 Internalizing the environmental externality[E(C)] shift the traditional market model(TM) to the green market model(GM)

We can see in Figure 2 above the following: i) that green markets(GM) are free markets where green producers(GK) and green consumers(GL) determine the green market price(GP), the price at which green production and green consumption take place, which is indicated by the

continuous black arrows from GK and GL to GM; and ii) that the green market price(GMP = GP) reflects the internalization of the environmental cost{I[E(C)] = I(c)} as indicated by the continuous brown arrow going from E(C) to GM.

The structure of environmental management based markets(EEM)

Addressing the consequences of the environmental externality generation problem requires the externalization of the relevant environmental externality costs[E(C)] associated with economic activity and setting a management cost Ti to patch the pricing mechanism of the traditional market price(TMP = P) to reflect environmental goals, transforming this way the traditional market price(TMP = P) into the environmental externality management market price(EEMP = DP = P + Ti) ; and therefore transforming the traditional market model into the environmental externality management market, with the structure shared in Figure 3 below:

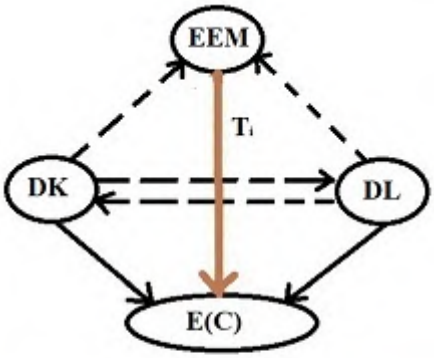

Figure 3 Managing relevant environmental externalities[E(C)] through environmental management tools like Tᵢ brings us to the world of environmental externality management markets(EEM).

We can appreciate in Figure 3 above the following aspects: i) that environmental externality management markets(EEM) are non-free markets where dwarf producers(DK) and dwarf consumers(DL) take the environmental externality management market price(EEMP = DP = P + Ti), the price at which dwarf production and dwarf consumption take place, which is indicated by the broken black arrows between DK and DL and from DK and DL to EEM; and ii) that the environmental externality management market price(EEMP = DP = P + Ti) reflects the set management cost Ti assigned to the management of the externality E(C) as indicated by the continuous brown arrow going from EEM to E(C).

Comparing market structures of green markets(GM) and environmental externality management markets(EEM) to have an idea of best tool for action

To be able to assess the effectiveness as a better environmental externality mitigation tool, we place in the same plane both the structure of green markets(GM) and the structure of environmental externality management markets(EEM) as follows:

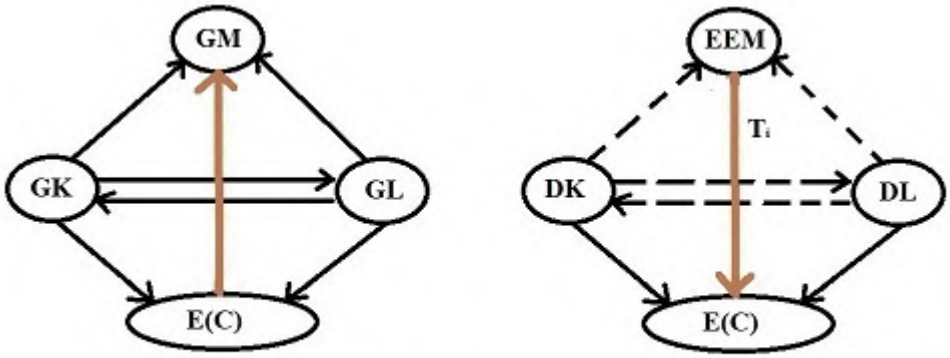

Figure 4 Comparing the structure of green markets with that of environmental externality management markets

We can appreciate in Figure 4 above that the full internalization of the environmental cost[E(C)] as indicated by the continuous brown arrow going upwards in the green market(GM) to the left is a full fix of the sustainability problem that was affecting the structure of the traditional market(TM) shared in Figure 1 above as the environmental sustainability gap(ESG) is fully closed by full environmental externality cost internalization.

On the other hand, we can see in Figure 4 above that the externalization of the environmental cost[E(C)] to be managed at the management cost Ti as indicated by the continuous brown arrow going downwards in the environmental externality management market(EEM) to the right is a patch of the sustainability problem that was affecting the structure of the traditional market(TM) shared in Figure 1 above as it is focused on managing the consequences of the externality generation problem and since Ti < E(C), this leaves the environmental sustainability gap(ESG) still open as the environmental externality management market(EEM) is at work. In other words, green markets(GM) attack the root cause of the problem while environmental externality management markets(EEM) aim at patching the environmental externality generation problem.

Implications:

i) Since green market prices(GMP = GP) reflect the environmental cost of doing business, then they have a continuous circular green economy structure of the form green production-green consumption-environmental externalities, where there are no environmental sustainability gaps(ESG = 0); ii) Since environmental externality management market prices(EEMP = DP = P + Ti) reflect only a portion Ti of the total environmental externality externalized[E(C)] so that E(C) > Ti, then it has a broken circular environmental externality economy structure of the form dwarf production-dwarf consumption-environmental externalities, where there is still a

remaining environmental sustainability gap(RESG) as the environmental externality management impact(EEMI = Ti) is smaller than the environmental sustainability gap[ESG = E(C)], which means that EEMI = Ti < ESG = E(C), and therefore, ESG - EEMI = E(C) - Ti = RESG); iii) The existence of this remaining environmental sustainability gap(RESG) indicates that environmental externality management markets(EEM) do not solve the sustainability problem affecting the traditional market.

In summary:

Based on the discussion above, we cannot solve the environmental externality problem affecting the traditional market(TM) by patching it through environmental externality management(EEM) tools to address the consequences of the externality generation problem as doing this leaves the environmental sustainability gap(ESG) still open, meaning that environmental externalities may rise when environmental externality management markets(EEM) are at work. The only fix to the sustainability problem is through green markets as they address the root cause of the problem, which is the traditional market price-environmental externality cost disconnection.

Food for thoughts

i)Are environmental externality markets consistent with green economy thinking? I think no, what do you think? and ii) Do environmental externality markets promote a culture to produce and consume at the lowest pollution cost possible? I think no, what do you think?

Conclusions

First, it was shown that when we must account for the environmental externalities that go together with business activities, then the sustainability of the traditional market is affected. Second, it was stressed that this traditional market sustainability problem has a root cause and it has consequences. Third, it was highlighted that the sustainability problem is solved only through an environmental sustainability fix that shifts the traditional market towards green markets. Finally, it was pointed out that a sustainable development patch through environmental externality management markets does not solve the sustainability problem as it stills leaves the root cause of the problem open feeding the environmental sustainability gap as the externality management program is at work. In other words, we cannot solve an environmental sustainability problem by managing the consequences of that problem as the root cause of the externality generation problem still is at work while environmental externality management is taking place. A sustainability problem can only be solved with a sustainability tool, in this case the environmental sustainability tool.

References

Muñoz, Lucio, 2016. Perfect Green Markets vrs Dwarf Green Markets: Did We Start Trying to Solve the Environmental Crisis in 2012 With the Wrong Green Foot? If Yes, How Can This Situation Be Corrected?. ***In: International Journal of Advanced Engineering and Management Research(IJAEMR),*** Vol.1, Issue 6, Pp 389-406, August, India.

Muñoz, Lucio, 2017. **Is Environmental Externality Management a Correction of Adam Smith's Model to Make it Environmentally Friendly and Shift it Towards Green Markets or is it a Distortion on Top of Another Distortion?.** ***International Journal of Economics, Business and Management Studies,*** **4(1): 1-16.**

Muñoz, Lucio, 2019. The Flipping of Traditional Economic Thinking: Contrasting the Working of Dwarf Green Market Thinking with that of Green Market Thinking to Highlight Main Differences and Implications, In: ***Global Journal of Management and Business Research: E Marketing,*** Volume 19, Issue 4, Version 1.0 , Framingham, Massachusetts, USA.

Muñoz, Lucio, 2020. **Sustainability thoughts 103: How the shift from traditional markets to green markets would have looked like had the 1987 Brundtland Commission recommended then an environmental sustainability fix?,** ***Boletin CEBEM-REDESMA,*** Año 14, No.3, March, La Paz, Bolivia.

United Nations Conference on Sustainable Development(UNCSD), 2012a. ***Rio+20 Concludes with Big Package of Commitments for Action and Agreement by World Leaders on Path for a Sustainable Future,*** Press Release, June 20-22, New York, NY, USA.

United Nations Conference on Sustainable Development(UNCSD), 2012b. ***The Future We Want,*** June 20-22, New York, NY, USA.

World Commission on Environment and Development(WCED), 1987. ***Our Common Future,*** Oxford University Press, London, UK.

Citation:

Muñoz, Lucio, 2020. **Sustainability thoughts 106: Can we solve an environmental sustainability problem by managing the consequences of that problem? If not, why not?**, ***Boletin CEBEM-REDESMA***, Año 14, No.5, May, La Paz, Bolivia.