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Sustainability thoughts 107: Comparing the structure of the circular green economy with that of the circular environmental externality management based economy to identify differences as well as to point out the market implications of these differences

By

Lucio Muñoz*

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

Abstract

There is an environmental sustainability gap embedded in the circular traditional market economy illusion, which comes to life when accounting for environmental externalities in the traditional market becomes binding. Dealing with this environmental sustainability gap was at the heart of the 2012 United Nations Conference on Sustainable Development Rio +20. The 2012 UNCSD conference had two choices at that time to address that environmental sustainability gap: a) paradigm fixing through green markets to end the disconnect between the traditional market price in the traditional market and the associated environmental externality cost or b) paradigm patching through environmental externality management based markets aimed at managing the environmental sustainability gap. In other words we can address the environmental sustainability gap issue in two ways: a) we can fix the environmental sustainability gap by addressing the root cause of the externality problem, the disconnect between the traditional price in the traditional market and the relevant environmental externality; or b) we can patch the environmental sustainability gap by managing the consequences of the traditional price-environmental cost disconnection problem. Notice, that paradigm fixing through green markets leads to something beyond business as usual as the Brundtland Commission had called for in 1987 while paradigm patching leads simply to providing an environmental cover to business as usual.

When the 2012 UNCSD Rio + 20 conference called for the world to go green markets, green economies and green growth it seemed like it had chosen the option of fixing the

traditional market model in a way that flips it towards perfect circular green market thinking to fully close that environmental sustainability gap, and go that way beyond business as usual. That meant that the 2012 UNCSD Rio + 20 conference had seen a sustainability problem to be fixed through environmental sustainability means or green markets, it did not see a sustainable development issue as the Brundtland commission did in 1987. Hence, the 2012 UNCSD Rio + 20 conference called for the use of perfect green market thinking and green economy thinking to address the environmental sustainability gap affecting the sustainability of the traditional market, a sustainability issue. However, since that 2012 UNCSD Rio + 20 conference the world community has rapidly moved towards the option of patching the business as usual model through the use of circular environmental externality management based markets. In other words, the world community has slowly moved away from green market solutions to green market problems since 2012 and it has moved rapidly towards the use of non-green market solutions to green market problems, a clear violation of the theory-practice consistency principle, which requires the theory to match the practice or vis a vis.

At this moment it is not clear what the 2012 United Nations Conference on Sustainable Development Rio +20 thinking was in terms of what the nature of both the circular green economy and the circular environmental externality management based economy is to compare them and to determine that way which one of them is the proper solution to the environmental sustainability gap problem or to justify its use. The discussion above raises important questions such as how the structure of the circular green economy would have looked like had Rio + 20 conference envisioned one? How the structure of the circular environmental externality management based economy would have looked like had Rio +20 conference proposed one? Which are the main differences between the circular green economy and the circular environmental management based economy and what are the market implications of this? Among the goals of this paper is to provide answers to these questions.

Key concepts

Sustainability, traditional market, green market, environmental externality, environmental externality management, paradigm flip, paradigm patch, circular traditional economy, circular green market economy, circular environmental externality based economy, traditional market environmental externality illusion.

Introduction

a) The environmental sustainability gap embedded in the traditional market circular economy

There is an environmental sustainability gap embedded in the circular traditional market economy illusion, which comes to life when accounting for environmental externalities in the traditional market becomes binding, a situation that was summarized recently (Muñoz 2020a) as follows as in Figure 1 below:

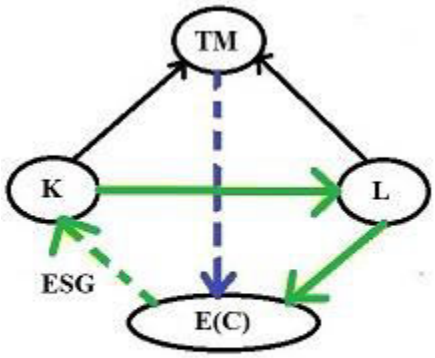

Figure 1 The environmental externality gap (ESG) embedded in the circular traditional market(TM) illusion.

We can see in Figure 1 above when only environmental externalities[E(C)] matter the following: i) the disconnect between the traditional market(TM) and the relevant environmental externality E(C) represented by the broken blue line is the sustainability problem affecting the sustainability of the traditional market(TM); and ii) the environmental sustainability gap(ESG) is the consequence of the sustainability problem affecting the sustainability of the traditional market(TM).

b) The 2012 United Nations Conference on Sustainable Development Rio + 20(UNCSD)

Dealing with this environmental sustainability gap(ESG) was at the heart of the 2012 United Nations Conference on Sustainable Development Rio +20 as they made dealing with the environmental issue a priority(UNCSD 2012a; UNCSD 2012b). The 2012 UNCSD conference had two choices at that time to address that environmental sustainability gap(ESG) as indicated in Figure 1 above: a) paradigm fixing through green markets to end the disconnect between the traditional market price(TMP) in the traditional market and the associated environmental externality cost as indicated by the broken blue arrow closing that way the environmental sustainability gap(ESG = 0) or b) paradigm patching through environmental externality management based markets aimed at managing the environmental sustainability gap(ESG > 0). In other words, Figure 1 above tells us that we can address the environmental sustainability gap issue(ESG) in two ways: a) we can fix it by addressing the root cause of the externality problem, the disconnect between the traditional price in the traditional market and the relevant environmental externality; or b) we can patch it by managing the consequences of the traditional price-environmental cost disconnection problem. Notice, that paradigm fixing through green markets leads to something beyond business as usual as the Brundtland Commission had called

for in 1987(WCED 1987) while paradigm patching leads simply to providing an environmental cover to business as usual. It was pointed out recently that cost internalization increases model sustainability and that cost externalization decreases model sustainability(Muñoz 2020b) and hence, the paradigm fix aims at increasing model sustainability through cost internalization and the paradigm patch is directed at managing model unsustainability through managing the environmental externality.

c) The action taken by the 2012 United Nations Conference on Sustainable Development Rio + 20(UNCSD)

When the 2012 UNCSD Rio + 20 conference called for the world to go green markets, green economies and green growth it seemed like it had chosen the option of fixing the traditional market model in a way that flips it towards perfect circular green market thinking to fully close that gap, and go that way beyond business as usual. That meant that the 2012 UNCSD Rio +20 conference had seen a sustainability problem to be fixed through environmental sustainability means or green markets as indicated in Figure 1 above, it did not see a sustainable development issue as the Brundtland commission did in 1987. It has been indicated that the Brundtland Commission recommended the use of sustainable development thinking in 1987 because it saw the price-externality problem affecting the sustainability of Adam Smith's traditional market as a sustainable development issue, not as a sustainability issue(Muñoz 2020c), but that traditional market price-externality distortion is a sustainability problem(Muñoz 2020d). Hence, the 2012 UNCSD Rio + 20 conference called for the use of perfect green market thinking and green economy thinking to address the environmental sustainability gap affecting the sustainability of the traditional market as it is a sustainability issue. However, since that 2012 UNCSD Rio + 20 conference the world community has rapidly moved towards the option of patching the business as usual model through the use of circular environmental externality management based markets. In other words, the world community has slowly moved away from green market solutions to green market problems since 2012 and it has moved rapidly towards the use of non-green market solutions to green market problems, a clear violation of the theory-practice consistency principle(Muñoz 2009), which requires the theory to match the practice or vis a vis.

d) The need to understand the 2012 United Nations Conference on Sustainable Development Rio + 20 thinking

At this moment it is not clear what the 2012 United Nations Conference on Sustainable Development Rio +20 thinking was in terms of what the nature of both the circular green economy and the circular environmental externality management based economy is to compare them and to determine that way which one of them is the proper solution to the environmental sustainability gap problem or to justify its use. The discussion above raises important questions such as how the structure of the circular green economy would have looked like had Rio + 20 conference envisioned one? How the structure of the circular environmental externality

management based economy would have looked like had Rio +20 conference proposed one? Which are the main differences between the circular green economy and the circular environmental management based economy and what are the market implications of this? Among the goals of this paper is to provide answers to these questions.

Objectives

a) To show how the structure of the circular green economy would have looked like had Rio + 20 conference envisioned one; b) To highlight how the structure of the circular environmental externality management based economy would have looked like had Rio +20 conference proposed one; and c) to point out the main differences between the circular green economy and the circular environmental management based economy while stressing the market implications of these differences.

Methodology

First, the terminology and operational concepts and externalization and internalization rules used to support this article are shared. Second, the structure of the circular green economy is derived from the fixing the environmental sustainability gap through perfect green market thinking. Third, the structure of the circular environmental externality management based economy is extracted from the handling of the environmental sustainability gap through non-green market means. Fourth, the circular green economy and the circular environmental externality management based economy are compared to highlight differences and point out relevant market implications based on those differences. Finally, some food for thoughts and conclusions are given.

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

E(C) = externalization of C I(c) = internalization of c.

TMP = traditional market price GMP = green market price

ESG = environmental sustainability gap EEG = environmental externality gap

DK = dwarf producer/supply DL = dwarf consumer/demand

DM = dwarf market DMP = dwarf market price

Operational concepts and rules

i) Operational concepts

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

9) Full costing, *the reflecting in the pricing mechanism of the market all cost associated with*

production; there are no market distortions.

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

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

12) 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.*

13) 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.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

37) 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 production-consumption-environmental externality.*

38) 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.*

39) 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 us 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 us 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 us 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 us 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 circular green economy

If we deal with the environmental sustainability gap(ESG) affecting the sustainability of the circular traditional market(TM) shown in Figure 1 above by internalizing the environmental cost of doing business{I[E(C)] = I(c)} in the pricing mechanism of the market, we shift it towards the circular green economy(GM) as shown in Figure 2 below:

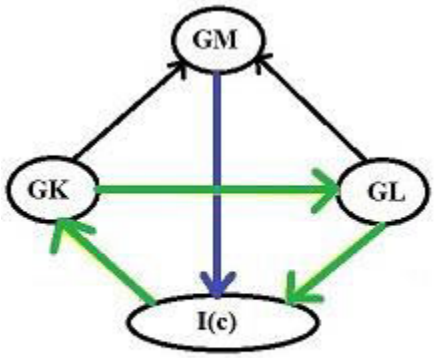

Figure 2 The structure of the circular green economy(GM).

Figure 2 above simply says that as green markets(GM) internalize the environmental cost of doing business[I(c)] they have a solid circular green economy(CGE) as this action closes the environmental sustainability gap(ESG = 0). Figure 2 above helps us also to highlight the following about the green economy: a) there are no environmental sustainability gaps(ESG) in the circular green economy as indicated by the connected continuous green arrows; b) that green producers(GK) and green consumers(GL) interact freely and clear the market at the green market price(GPM = GP) as indicated by the continuous black arrows going from GK and GL to TM; and c) therefore, green producers(GK) and green consumers(GL) are green market price(GP) setters.

The circular environmental externality management based economy

If we deal with the environmental sustainability gap(ESG) affecting the sustainability of the circular traditional market(TM) shown in Figure 1 above by managing the environmental cost of doing business that is not reflected in the pricing mechanism of the market, we arrive to the circular environmental externality management based economy(EEM) as indicated in Figure 3 below:

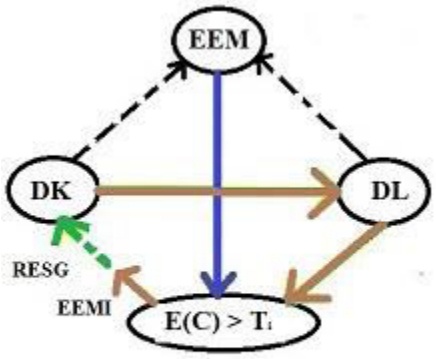

Figure 3 The circular environmental externality management based market(EEM)

Figure 3 above simply tells us that as environmental externality management markets(EEM) externalize the environmental cost of doing business[E(C)] in order to manage it they do not have a solid circular environmental externality management based economy(CEEM) as this action leaves the environmental sustainability gap still open and active(ESG > 0), which is placed next to environmental externality management impact(EEMI). Figure 3 above allows us also to stress the following about environmental externality management markets(EEM): a) there is still a remaining environmental sustainability gap(RESG) in the circular environmental externality management based economy as indicated by the broken green arrow following the environmental externality management impact(EEMI); b) that dwarf producers(DK) and dwarf consumers(DL) do not interact freely and do clear the market, but at a given environmental externality management price(T_i) as indicated by the broken black arrows going from DK and DL to EEM; and c) therefore, dwarf producers(DK) and dwarf consumers(DL) are dwarf market price takers. We can also imagine based on Figure 3 above that if the environmental externality management tax(T_i) were to be set equal to the environmental cost externalized[E(C)] so that T_i = E(C), then the environmental externality management framework(EEM) would take the structure of a green market(GM) as then the environmental sustainability gap(ESG) would be fully closed(ESG = 0).

Comparing the circular green economy and the circular environmental management based economy

To be able to highlight easily the differences, we placed the structure of both circular economies on the same plane as done in Figure 4 below:

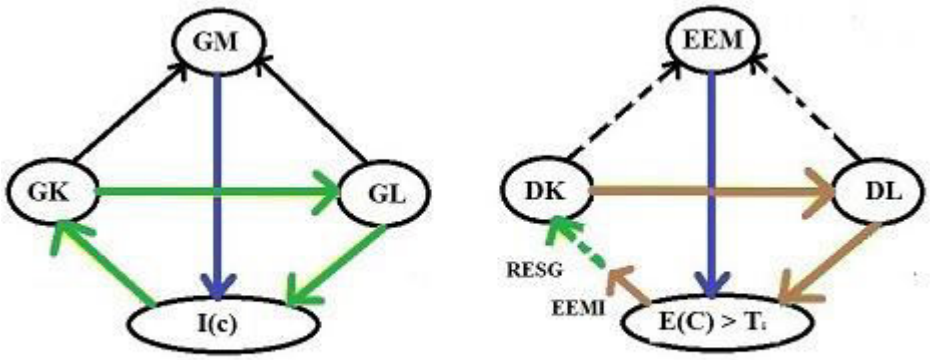

Figure 4 Comparing the structure of the circular green economy with that of the externality managment based economy

Based on Figure 4 above the following differences can be pointed out: i) they are different types of markets: the green market(GM) is a perfect free market where green supply(GK) and green demand(GL) determine the green market price as indicated by the continuous black arrows from GK and GL to GM, the environmental externality management market(EEM) is a non-perfect, non-free markets as indicated by the broken black arrows from DK and DL to EEM; ii) they have different types of economic agents: the green market(GM) is driven by green producers(GK) and green consumers(GL), environmental externality management markets(EEM) are moved by dwarf prouducers(DK) and dwarf consumers(DL); iii) they have different types of circularity: the green market(GM) has a continuous circular economy, the environmental externality management market(EEM) has a broken circular economy; iv) they require different levels of government intervention: green markets(GM) need no government intervention, environmental externality management markets(EEM) require ongoing government intervention; v) they have different development goals: green markets(GM) are aimed at making environmental pollution reduction profitable(less pollution content, lower price), environmental externality management markets(EEM) are directed simply at discouraging pollution from production and consumption through market intervention with the view that less pollution is better than doing nothing to deal with the environmental sustainability gap problem(ESG); vi) they are different types of corrections: the green market(GM) is a full fix that ends the disconnection between traditional market price and associated environmental externalities, the environmental externality management market(EEM) is a patch designed to provide environmental cover to business as usual; and vii) they have different types of accountability: in green markets(GM) the responsibility for failure falls on green producers(GK) and green consumers(GL)]; and then government intervention is justified, in environmental externality management markets(EEM) the responsibility for failure falls on the intervening government.

Market Implications

a) Green markets(GM) mean a move away from business as usual as they are no longer traditional markets while environmental externality management based markets(EEM) are in essence business as usual markets with an environmental cloud over them; b) In green markets(GM), a culture of green market behaviour is promoted as producing increasingly less and less polluting goods and services leads to increasingly lower and lower green prices, encouraging that way through time a point of minimal pollution content or zero pollution content while environmental externality management markets(EEM) are delinked from pollution content. In environmental externality management markets(EEM) for example the production of goods and services with even with more pollution content is fine as long as you can pay the environmental tax as consumption and production is increasingly being constrained by increasing environmental management costs; and c) the use of green markets(GM) is the science based solution to the environmental sustainability problem(ESG) created by the disconnection between traditional prices and related environmental externalities, the environmental externality management market(EEM) is not as green markets(GM) fix the root of the externality generation problem, the distorted traditional market price in environmental externality terms.

Food for thoughts

a) Are environmental externality markets dwarf green markets? I think yes, what do you think? and b) Is environmental externality management thinking inconsistent with clean economy thinking? I think yes, what do you think?

Conclusions

It was shown that correcting the disconnect between the traditional market price and the associated relevant environmental costs shift the traditional market circular structure to the green market circular structure closing fully the environmental sustainability gap. It was pointed out that when patching the traditional market model using environmental externality management markets there is a limited environmental externality impact that takes place under an active remaining environmental sustainability gap. It was stressed that among the many differences that green markets are perfect free markets and environmental externality management markets are government intervention based markets. Finally, it was highlighted that green markets are perfect science based markets that encourage a green culture led by green producers and green consumers and that environmental externality management markets discourage the emergence of a green culture as production and consumption regardless of the pollution content will take place here as long dwarf producers are able to pass the environmental externality management cost to dwarf consumers.

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