Sustainability thought 178: Environmental pollution management markets versus environmental pollution reduction markets: Which one is environmentally clean economy transition friendly? Why?

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By

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Abstract

There are two ways of dealing with the environmental pollution problem separating environmentally dirty markets from environmentally clean markets, using environmental pollution management markets and using environmental pollution reduction markets. If the goal is to transition from environmentally dirty economies to environmentally clean economies, then understanding which one is friendly and which one is not friendly with such a transition is important for science-based policy making and for understanding the rationale behind non-science-based policy making. And this makes the following topic and question relevant: Environmental pollution management markets versus environmental pollution reduction markets: Which one is environmentally clean economy transition friendly? Why? Among the goals of this paper is to provide answers to these questions.

Key concepts

Dirty market, environmentally dirty market, environmental pollution management market, environmental pollution reduction market, environmentally clean market, pollution production markets, pollution-less markets, environmental pollution problem.

Introduction

a) The two ways to deal with the environmental pollution problem separating the environmentally dirty economy from the environmentally clean economy

Ideas such as environmental pollution management markets and environmental pollution reduction markets can be useful to understand ways to address the environmental problem found between environmentally dirty economies and environmentally clean economies (Muñoz 2022) as well as to highlight the usefulness of these approaches in supporting an orderly transition in

the future towards an environmentally clean world. These clean market transition ideas were introduced recently both in terms of dwarf green markets (Muñoz 2023a) and in terms of green markets (Muñoz 2023b), which summarized in Figure 1 below:

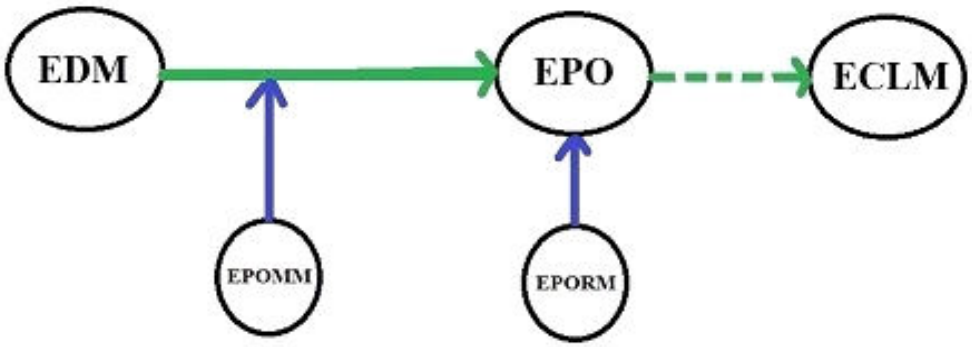

Figure 1 **The environmenal pollution management market solution(EPOMM) and the environmental pollution reduction market reduction marke solution(EPORM) to the environmental pollution problem(EPO)**

Figure 1 above tells us that there are two ways of dealing with the environmental pollution problem (EPO) separating the environmentally dirty market (EDM) from the environmentally clean market (ECLM), namely environmental pollution management markets (EPOMM) and environmental pollution reduction markets (EPORM), the first one being a partial fix and the second one a full fix.

b) Linking environmental pollution correction markets to environmental clean market transition friendliness

As indicated above, there are two ways of dealing with the environmental pollution problem separating environmentally dirty markets from environmentally clean markets, using environmental pollution management markets and using environmental pollution reduction markets. This pollution production problem linked to the working of traditional market thinking (Smith 1776) was addressed by the Brundtland Commission in 1987(WCED 1987) through sustainable development thinking; and later this same pollution production problem was the central focus of the 2012 Rio +20 conference(UNCSD 2012a; UNCSD 2012b), who was initially advocating for a full environmental fix a la pollution problem internalization, but in the end, it took the route of a partial fix a la pollution management. If the goal is to transition from environmentally dirty economies to environmentally clean economies, then understanding which one is friendly and which one is not friendly with such a transition is important for science-based policy making and for understanding the rationale behind non-science-based policy making. And this makes the following topic and question relevant: Environmental pollution management markets versus environmental pollution reduction markets: Which one is environmentally clean economy transition friendly? Why? Among the goals of this paper is to provide answers to these questions.

Objectives

1) To point out the nature of the environmental pollution management market solution, its consequences once in place, and the type of environmental clean market transition friendliness it possesses; 2)To point out the nature of the environmental pollution reduction market solution, its consequences once in place, and the type of environmental clean market transition friendliness it possesses; and 3) To contrast the nature of the two solutions to show that one of the solutions moves away and away from the goal of environmentally clean markets once in place.

Methodology

First, the terminology and operational concepts and tools is given. Second, the structure of the environmental pollution management market solution to the environmental pollution problem is stressed, its consequences highlighted, and the nature of its environmentally clean market transition friendliness is discussed. Third, the structure of the environmental pollution reduction market solution to the environmental pollution problem is shared, its consequences pointed out, and the nature of its environmentally clean market transition friendliness is explained. Fourth, the friendliness displayed by environmental pollution management markets and by environmental pollution reduction markets is contrasted in the same plane to show that one of them moves away from the goal of the environmental clean market transition. And finally, some food for thoughts and conclusions are underlined.

Terminology

EDM = Environmentally dirty market

EPO = Environmental pollution

EPOMM = Environmental pollution management market

EPORM = Environmental pollution reduction market

EM = Environmental margin

REPO = Remaining environmental problem

REM = Remaining environmental margin

DEM = Dwarf environmental margin

ECLM = Environmentally clean market

EPO_{M} = Environmental pollution under management

I[EPO] = Environmental problem internalization

RETG = Renewable energy technology gap

Operational concepts and tools

i) Environmentally dirty market, one cleared by an environmentally distorted market price.

ii) Environmental pollution management market, one that addresses only a portion of the environmental pollution problem.

iii) Environmental pollution reduction market, one that addresses fully the environmental pollution problem.

iv) Environmental margin, one that reflects the environmental cost of production.

v) Dwarf environmental margin, one that reflects only a portion of the environmental cost of production.

vi) Environmental clean market, one where the environmental margin is zero.

vii) Renewable energy technology gap, the technology gap that needs to be closed to leave non-renewable energy markets behind, partially or fully.

viii) Environmental problem internalization, the tool that corrects environmentally distorted markets.

ix) Environmental cost externalization, the tools behind environmentally distorted market prices.

x) Remaining environmental margin, the difference between the environmental margin and dwarf environmental margin driving the remaining environmental problem.

The environmental pollution management market way to address the environmental pollution problem

i) The setting up of environmental pollution management markets

When environmental pollution management markets (EPOMM) are used to manage some of the environmental pollution problem created by environmentally distorted market prices, we create the situation described in Figure 2 below:

Figure 2 When the enviromental pollution management market solution(EPOMM) is chosen there is still a remaining environmental pollution problem(REPO) separating the environmentally dirty market(EDM) from the environmentally clean market(ECLM) as only a portion of the environmental pollution problem(EPO_M) is under management.

We can highlight based on Figure 2 above that managing a portion of the environmental problem (EPO_M) leaves a remaining environmental problem (REPO) out there keeping environmental pollution management markets (EPOMM) delinked from environmentally clean markets as indicated by the broken arrow from REPO to ECLM.

ii) The consequences of operating under a remaining environmental problem

The three market consequences associated with the creation of the remaining environmental problem (REPO) under environmental pollution management markets are indicated in Figure 3 below:

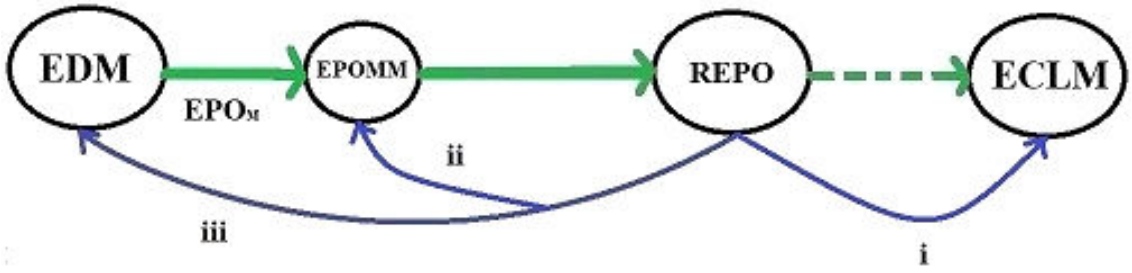

Figure 3 The consequences of the remaining environmental pollution problem(REPO) i) in terms of transitioning to the environmentally clean market(ECLM); ii) in terms of the ongoing stability of the environmentally dirty market (EDM) and the environmental pollution management market(EPOMM); and iii) in terms of the non-circular nature of the environmentally dirty market(EDM) and of the environmental pollution management market (EPOMM) as pollution externalization is still taking place.

The information in Figure 3 above tells us the following things about the existence of the remaining environmental problem(REPO): 1) it prevents the movement of environmental pollution management markets(EPOMM) towards environmentally clean markets(ECLM) as arrow "i" from REPO to ECLM shows; 2) it affects the stability of remaining environmentally dirty markets(EDM) as arrow "iii" from REPO to EDM indicates; and 3) it affects the stability of environmental pollution management markets(EPOMM) as the arrow "ii" from REPO to EPOMM demonstrates. Notice that going environmental pollution management markets

(EPOMM) is a move away from environmentally dirty markets (EDM), where permanent government intervention is needed for it to work.

iii) The type of environmental clean market transition friendliness displayed by environmental pollution management markets

The existence of the remaining environmental problem (REPO) indicates that when environmental pollution management markets are set up you are creating a permanent environmental market failure that leads them away from the transition towards environmentally clean markets (ECLM), a situation stated in Figure 4 below:

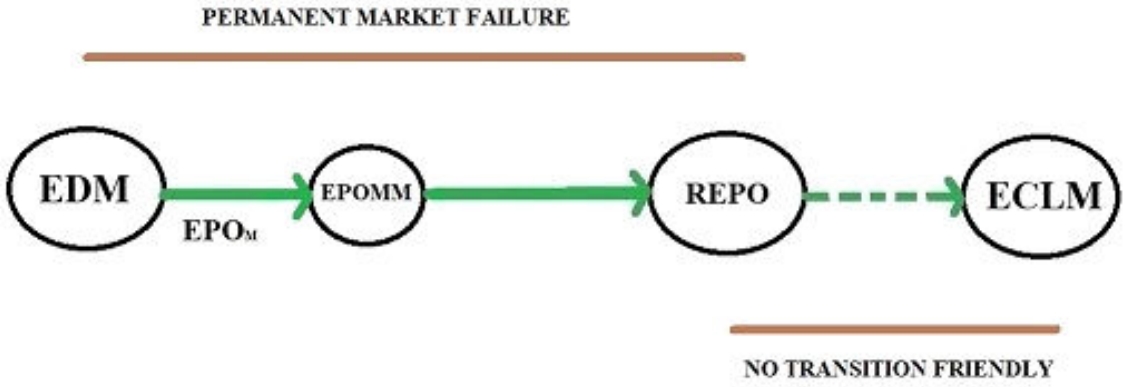

Figure 4 No transition friendliness under permanent environmental market failure

Figure 4 above shows in simple terms that environmental pollution management markets (EPOMM) are no environmental clean economy transition friendly as they create a remaining environmental pollution problem (REPO) as a result of a permanent environmental market failure that keeps them away from environmentally clean markets (ECLM).

The environmental pollution reduction market way to address the environmental pollution problem

i) The setting up of environmental pollution reduction markets

When environmental pollution reduction markets (EPORM) are used to address fully the environmental pollution problem created by environmentally distorted market prices, we create the situation highlighted in Figure 5 below:

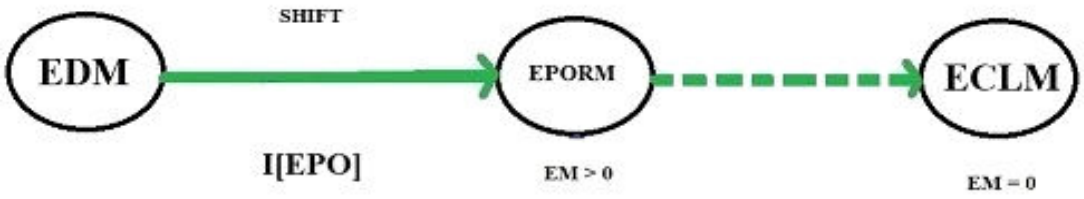

Figure 5 When the environmental pollution reduction market sollution(EPORM) is chosen then the internalization of the environmental pollution problem(I[EPO]) shifts the environmentally dirty market(EDM) to the environmental pollution reduction market(EPORM)

We can indicate based on Figure 5 above that internalizing the environmental pollution problem(I[EPO]) leaves no remaining environmental problem (REPO) out there creating a transition path from environmental pollution reduction markets (EPORM) to environmentally clean markets as indicated by the broken arrow from EPORM to ECLM as it creates an environmental cost differential between those 2 types of markets, EM > 0 and EM = 0 respectively. Notice that the environmental margin(EM) under which environmental pollution reduction markets(EPORM) operates in Figure 5 above is positive(EM > 0) as they run under pollution based non-renewable energy once in place; and environmentally clean markets have no environmental margin(EM = 0), hence environmental pollution reduction markets make pollution reduction a profit making opportunity as the lower the environmental margin goes the lower the cost of production and consumption is and therefore, the lowest the level of environmental pollution production created. Notice in Figure 5 above that the internalization of the environmental problem(I[EPO]) shifts the environmentally dirty market (EDM) towards the environmental pollution reduction market (EPORM), creating the green margin differential needed to create the profit-making opportunity that will lead to the transition of environmental pollution reduction market towards environmental pollution-less markets or environmentally clean markets.

ii) The consequences of operating under no remaining environmental problem

The two market consequences associated with the elimination of the remaining environmental pollution problem (REPO) under environmental pollution reduction markets are shown in Figure 6 below:

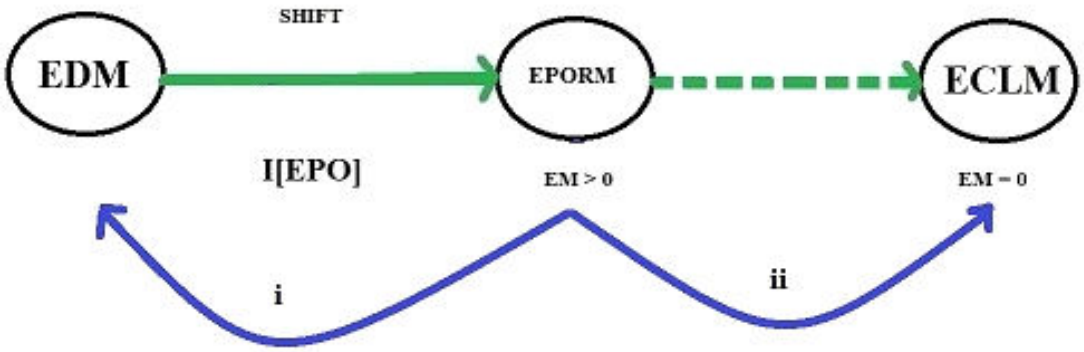

Figure 6 The consequences of setting up environmental pollution reduction markets(EPORM)

The information in Figure 6 above indicates the following about the no existence of the remaining environmental problem(REPO): 1) it creates a path of movement from environmental pollution reduction markets(EPORM) towards environmentally clean markets(ECLM) as arrow "ii" from EPORM to ECLM shows; and 2) it leaves the old environmentally dirty market paradigm(EDM) behind as its knowledge base is irrelevant under both environmental pollution reduction market thinking and under environmentally clean market thinking, new ideas or corrected old ideas are now needed. Notice that going environmental pollution reduction market (EPORM) is a move that leaves the knowledge base of the environmentally dirty market (EDM) behind as it does not work in the new market.

iii) The type of environmental clean market transition friendliness displayed by environmental pollution reduction markets

The absence of the remaining environmental problem (REPO) tells us that when environmental pollution reduction markets are set up you are fully correcting distorted market prices to eliminate the environmental market failure they create, which opens the path towards a profitable transition towards environmentally clean markets (ECLM), a situation stated in Figure 7 below:

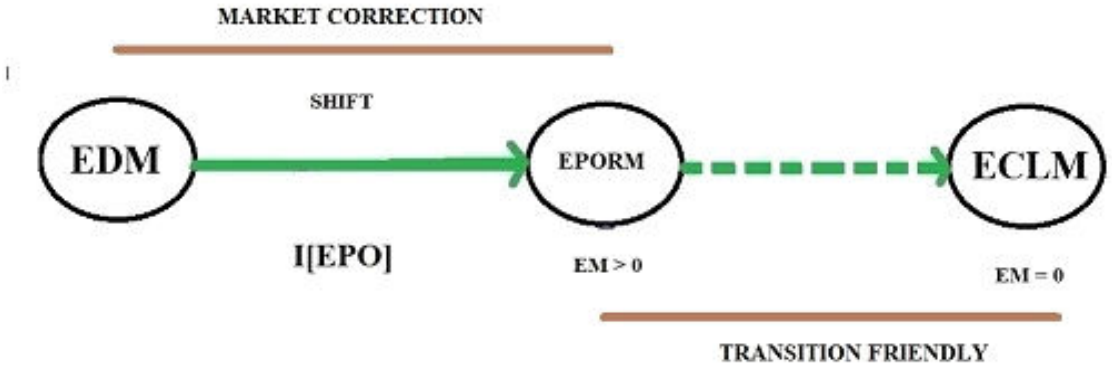

Figure 7 There is transition friendliness under market correction

Figure 7 above highlights in simple terms that environmental pollution reduction markets (EPORM) are environmental clean economy transition friendly as they create a profitable green margin reduction path that transitions environmental pollution reduction markets (EPORM) towards environmentally clean markets (ECLM), partially or fully, step by step.

The transition from environmental pollution reduction markets to environmentally clean markets

i) The structure of the transition

As reducing the environmental margin reflected in market prices is now a profit-making opportunity (GM -----> 0), then closing the renewable energy gap (RETG-----> ∞) to leave the non-renewable energy economy behind is now too a good profit marking opportunity, and this create the structure of the transition from the environmental pollution reduction market (EPORM) to the environmentally clean market (ECLM) as described in Figure 8 below:

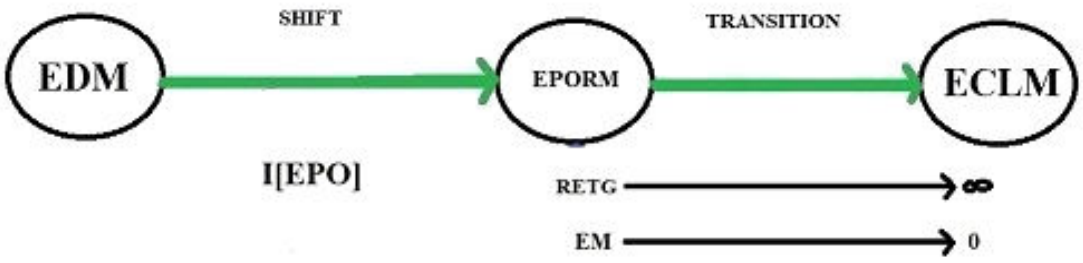

Figure 8 The structure of the transition to environmentally clean markets(ECLM)
The transition from the environmental pollution reduction market(EPORM) to the environmentally clean market(ECLM) through the closing of the renewable energy techonology gap(RETG) to drive the environmental cost of production(EM) towards zero(0).

Figure 8 above stresses that closing the renewable energy gap (RETG-----> ∞) allows environmental pollution reduction markets (EPORM) to reduce their environmental margin (EM----->0) so as to produce and consume at the lowest market price possible while producing the less pollution possible, until the environmental margin becomes zero (EM = 0), when arrived to the world of perfect environmentally clean markets.

ii) The partially dominant renewable energy-based market and fully dominant renewable energy-based market transition points.

The environmentally clean economy transition friendliness found in environmental pollution reduction markets (EPORM) can be seen as to be guided in steps first to a world under partial dominant renewable energy based environmental pollution reduction markets, and then to

a world under full dominance renewable energy-based markets, a situation depicted in Figure 9 below:

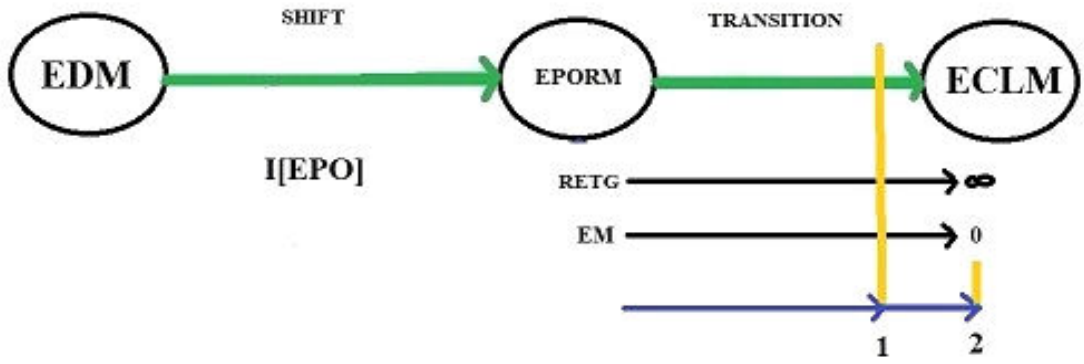

Figure 9 **The partially dominant renewable energy based environmental pollution reduction market(EPORM) point is at point "1"; and the fully dominant renewable energy based environmnetal pollution reduction market(EPORM) point is at point "2".**

Figure 9 above shows the transition point where the environmental pollution reduction market (EPORM) reaches the partially dominant renewable energy-based market status at point "1"; and the transition point where the environmental pollution reduction market (EPORM) becomes a fully renewable energy dominant based market status at point "2". Notice that at point "2" the environmental pollution reduction market (EPORM) becomes an environmentally clean market (ECLM) as at point "2" we have EM = 0. The idea that closing the renewable energy technology gap (RETG) is needed to transition to clean economies and that failure to do that may even lead to market blackouts has been recently pointed out (Munoz 2014).

Contrasting the friendliness of environmental pollution management markets and of environmental pollution reduction markets in the same plane

We can contrast the structure of transition friendliness and model structure displayed by environmental pollution management markets (EPOMM) and by environmental pollution reduction markets (EPORM) by placing their structures in the same plane as detailed in Figure 10 below

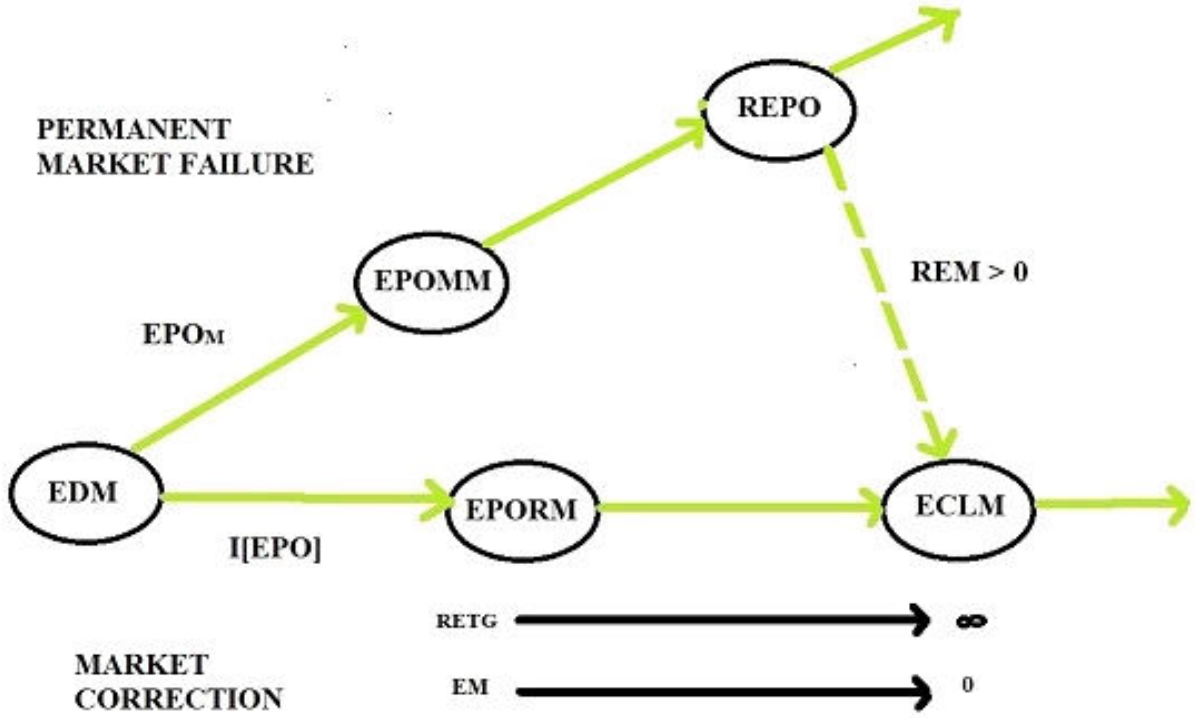

Figure 10 The environmental clean market(ECLM) transition friendly and transition unfriendly framework

The following key aspects can be pointed out based on Figure 10 above: i) at the top we can see that environmental pollution management markets work under a permanent environmental market failure that creates the remaining environmental problem and which leads them away from the goal of environmental clean markets as indicated by the green arrow going away from environmentally clean markets; ii) at the bottom we see a market correction that shift the environmentally dirty market towards the environmental pollution reduction market, which by means of closing the renewable energy gap to reduce the environmental margin moves towards the environmentally clean markets until they become one; iii) the further away the environmental pollution management markets are from environmentally clean markets, the greater the remaining environmental margin(REM > 0); and iv) When environmentally clean market come to exist, they will tend to expand at the lowest clean market price possible as indicated by the green arrow going from left to right from ECLM.

Food for thoughts

i) Is environmental pollution reduction a profitable opportunity under environmental pollution management markets? I think No, what do you think?; ii) Is investing in environmental pollution reduction technology a profitable opportunity under environmental pollution reduction markets? I think Yes, what do you think?; and iii) Can cost externalization theory be used to

explain why environmental management markets will tend to move away from the goal of environmentally clean markets once in place? I think Yes, what do you think?

Conclusions

First, it was pointed out that environmental pollution management solutions are partial solutions that lead to permanent environmental market failure, which prevents them from being environmentally clean economy transition friendly and which moves them away from the transition goal as environmental cost externalization is still taking place by means of the remaining environmental margin. Second, it was stressed that environmental pollution reduction solutions are full solutions that lead to a distorted market correction, which transform them into being environmentally clean economy transition friendly as pollution reduction now is a good profitable opportunity, which leads them towards environmentally clean economies. Third, it was indicated that the transition from environmental pollution reduction markets once in place can reach a point of partial renewable energy dominant market, and fully renewable energy dominant market, and when fully renewable energy dominant market, the environmental pollution reduction market becomes and behaves as an environmentally clean market. And finally, fourth, it was shown, graphically and analytically, that once in place we should expect environmental pollution management markets to move away from the goal of environmental clean market transition as the permanent environmental market failure prevents environmental pollution reduction from becoming a good business opportunity for expanding production and consumption while expanding pollution reduction.

References

Muñoz, Lucio, 2014. Understanding the Road Towards the Current Dominant Non-Renewable Energy Use Based Economy: Using an Inversegram to Point Out a Step-by-Step Strategy Towards an Efficient Dominant Renewable Energy Use Based Economy, ***Boletin CEBEM-REDESMA*****,** No. 11, December 23, La Paz, Bolivia.

Muñoz, Lucio, 2022. **Sustainability thoughts 139: How can the 2012 road to transition from environmental pollution based traditional economies to the environmentally clean economies that the world never built be pointed out?**

In: International Journal of Education Humanities and Social Science (IJEHSS), Vol. 5, No. 05, Pp. 65-77, ISSN: 2582- 0745, India.

Muñoz, Lucio, 2023a. **Sustainability thought 162: Can we transition from the environmentally dirty economy to the environmentally clean economy with the use of dwarf green markets?,** In: ***CEBEM-REDESMA Boletin***, Año 17, Nº 2, La Paz, Bolivia.

Muñoz, Lucio, 2023b. **Sustainability thought 179: Can we transition from the environmentally dirty economy to the environmental clean economy with the use of green markets? If Yes, why?,** In: ***International Journal of Education Humanities and Social Science (IJEHSS),*** April-May 2023, Volume 6, Issue 02, Pp. 115-131, ISSN: 2582-0745, India.

Smith, Adam, 1776. ***The Wealth of Nations***, W. Strahan and T. Cadell, London, UK.

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.