Indicators for Greening Value Chains

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Abstract

Green value at its broadest is concerned to analyse all sets of valuables that entities do have address in order to generate both socioeconomic and environmental added value, but following the maximisation of the positive impacts of their effort and effects.

At its narrowest, syntagma"green value chain" is used to refer to a "framework for measuring and reporting corporate performance against economic."

While numerous Green Value Chain assessments have been developed, there are not yet enough completed programs that focus on "greening the chains to allow the drawing out of lessons learned." Regarding vegetal and animal environmental destruction cannot always be solved with environmental policies alone.

It is important to take into account "economic, social, cultural and environmental bottlenecks in the value chain when addressing underlying root causes of inefficiencies." [1]

Keywords: Mix of policy instruments, Greening value chains, Green growth indicators, J.E.L. classification: Q01 Sustainable Development

1. Introduction

Since the First Industrial revolution humankind have been acting in ways which "affect the balance of of the Earth as whole."

The peace of development has been faster and faster and now, in the 21 th century, the velocity of development and transformations are impressive.

We are witnessing transformations that humanity has never seen before.

This is why do focus on rationalizing the inputs controlling into the value chain.

This means improving renewable capacity " in terms of water, energy, material, building, land and tools."

Relating outputs, the approach has in visage pollution and wastage, developing methods of "pollution control, cleaner production, eco-efficiency, life cycle assessment, closed loop production and industrial ecology, circular economy."

Green value chain interventions also include supporting for "green investment, skills training in green technologies, green entrepreneurship and business development, and greening the workplace."

A mix of policy instruments including "eco-labeling, green public procurement, green cluster networks, environmental taxes, tradable permits, subsidy reform, green regulations, norms and standards" are promoted. [2].

"The development of green and greening value means optimizing the economic and social outcomes within a closed loop system in an environmentally sustainable manner. It takes its inspiration from biological ecosystems in which natural resources are used in an equilibrium with supply and absorption capacity, in which one organism's waste is food for another organism and in which the total number of value chains aggregates to a global life cycle economy. " (Figure 1) [1].

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To know where we are and identify aspects of corporate environmental performance, we have to fix a set of values and coordinates regarding greening companies management.

In order to measure improving environmental performance, years ago, Dodge and Welford argue that we need "to define an ultimate" for serving as an upper boundary of sustainable performance on a "five-point scale." This kind of organization is referred to as the "transcendent firm".

"As a lower boundary, the least environmentally sensitive measure on the ROAST scale is represented by the "resistant organization." (Table 1) [2].
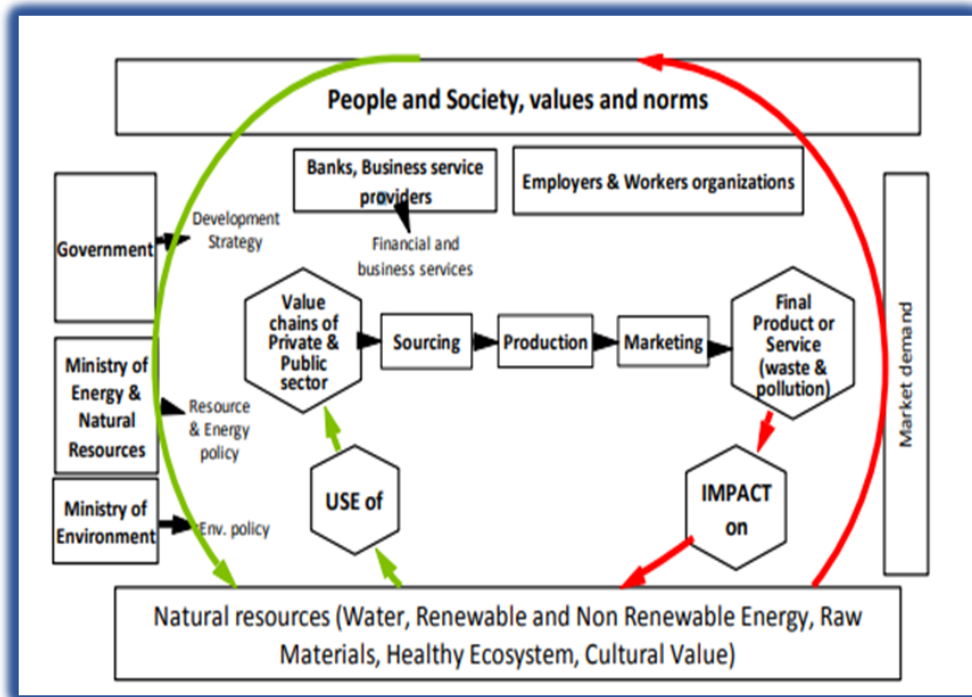
Figure 1. Global life cycle economy
Source: https://www.enterprise-development.org/wp-content/uploads/Green_Value_Chains_to_Promote_Green_Growth.pdf

Table 1. Five-Point ROAST Scale

Resistance (Stage I)	Total resistance to environmental values and rules. Organizations would be absolutely unresponsive and reactive to environmental initiatives.
Observe & Comply (Stage II)	The organization observes environmental laws, but actions reflect an unwilling attitude or lack of ability to comply. Actions are being enforced through legislation or court decisions.
Accommodate (Stage III)	Organization begins to adapt to change. Early indications of proactive and responsive behaviours. Actions are no longer based entirely on complying with environmental legislation; the organization begins to exhibit voluntary behaviour.
Seize & Preempt (Stage IV)	The organization voluntarily seizes and preempts its actions with environmental concerns. It proactively engages in setting the agenda. It is responsive to the many external stakeholders. The latter phases would display the attributes of sustainable development
Transcend (Stage V)	The organization's environmental values, attitudes, beliefs and culture exhibit a total support for the environment. The organization would proactively support and be responsive to all living things. It would act in a way which is fully consistent with sustainable development.

Source Dodge and Welford (Welford, 1995)
https://www.conserve-energy-future.com/wp-content/uploads/2013/06/Pollution_From_Industries.jpg [3]

Table 2. Ten-Point classification

No.	Strategy	Description
1	Ostrich	Companies that assume environmental challenge is a passing fad
2	Resistant	Companies that hinder the passing of environmental laws and regulations
3	Why Mes	Companies in which some well publicized event or accident acts as a catalyst
4	Indifference/non-compliance/stable/passive/laggards/ignored	Companies having low environmental risks, low environmental returns, cost constraints etc.
5	Thinkers	Companies waiting for others to take the lead
6	Offensive/smart movers	Companies having high environmental returns
7	Defensive/compliance/reactive/localized action	Companies having high environmental risks
8	Compliance-plus/anticipatory/doers/corporate action	Companies that move beyond compliance (proactive)
9	Commercial and environmental excellence/entrepreneurial	Companies where there is clean technology and organizational reform
10	Innovative/enthusiasts/leading edge/business scope action	Companies having high environmental risk, and also high return

Source http://www.aims-international.org/myconference/cd/PDF/MSD4-6111-Done.pdf [4]

Acording with Y. Loknath& Abdul Azeem, to better describe competitive advantage and the various strategies, a company should adopt in order to become greener or to gain play advantage another smarter strategy, a "ten-point strategy classification". They proposed Ten-Point classification (Table 2) [2].

2.Materials and methods

This paper aims is to expose a few indicators about the means of greening value chain and how solutions should be implemented. In order indicators for greening value chain will set up for firms management a framework in which the behavior of companies have to set the link on one hand between companies goal and the other hand between economics, etihics, science and technologiy actions and all of these put under regulation of sustainable development.

In this aspect a series of recent scientific studies were analyzed, and used. The paper was conducted based on the most significant syntesis and reports. This study is a qualitative one, emphasizing technique for examining human and companies activities involving environment depletion and reduction.

3. Three pillars of sustainability –economic, environmental and social aspects

Discussions about "Green growth concepts" and *Greening the value chains* are almost always mentioned in the concepts of sustainable development.

Major environmental problems on tracks varies, depending on the vision of the organizations.

This study reveals the views of three world reference organizations: UNEP, OECD and The World Bank.

UNEP argues for a transition to a green economy that is low-carbon, resourceefficient and inclusive, stating that such an economy seeks to improve well-being and social equity and at the same time reduce environmental risks and ecological scarcities."

The OECD (Table 3)""understands green growth as promoting economic growth and development and at the same time ensuring that natural assets continue to provide the resources and environmental services ... " OECD 2011-2014 GGKP.

The World Bank "defines green growth as being efficient in the way it uses natural resources, clean in the way it minimises pollution and environmental impacts, and resilient in that it takes into account

natural hazards and the role that environmental management and natural capital play in averting physical disasters." [5].

Fixing cornerstones and indicators that reflect overarching goals, help to ensure comparability between countries and to measure the progress.

Table 3. Ten-Categories and key indicators of green growth

Category	Explanation	Examples of possible key indicators
Natural assets	Indicators monitor the natural asset base and any changes in it.	- Natural resource use (index) - Change in land use
Environmental and resource productivity/intensity	Indicators measure economic growth in terms of how low-carbon and resource efficient it is.	- Carbon productivity - Resource productivity
Environmental quality of life	Indicators describe direct and indirect interaction between humans and the environment.	Exposure to harmful levels of air pollution (% of population)
Policies and opportunities	Indicators map the policy framework and the economic opportunities resulting from green growth.	- Environmental policies - "Green" jobs
Socio-economic context	Indicators describe the socio-economic context.	*Context-based, e.g. income inequality, access to health care*

Source based on OECD 2011-2014 GGKP [6]
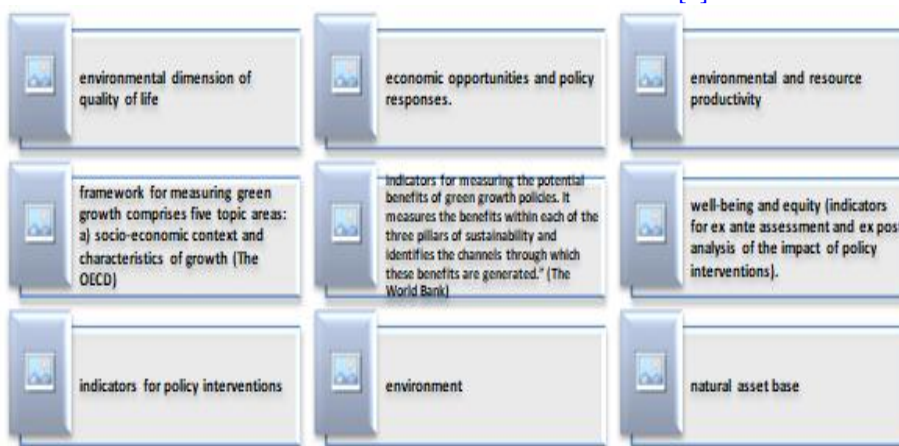
Figure 2. A set of indicators for EP's indicators for green economic policies
Source Author based on https://stats.oecd.org/index.aspx?queryid=77869 [7]

Industrialised countries and emerging economies have different degrees of interest for greening their different strategies depending on their goals.

Indicators needed in order to map progress in greening value chain are set up according with different level of developing economies and must be able to preserve the complexity of the elements being evaluated. It is important to stress that indicators must simplify, but also must be relevant. [5].

4. Green growth indicators developed by the UNEPS, the OECD and the World Bank

The international organisations UNEPS, OECD and the World Bank has a set of indicators for EP's indicators for green economic policies. Its can be divided into three categories which cover up to five topics each and have been assigned a total of 40 indicators (Figure 2).

A central issue in the discussion about green growth is how to quantify and measure it using indicators.

In order to be suitable for measuring green growth, indicators must satisfy „the four criteria of policy relevance, analytical soundness, measurability and ease of communication„ (cf. OECD 2011). Green growth is too complicates a freamwork management to be mapped in such a manner as to achieve a desired result using just a single indicator. Instead, a couple of indicators are needed to do accuracy to its content.

On the one hand, measuring green growth should allow the initiated development path to be analysed as objectively as possible and facilitate a certain degree of comparability. On the other hand, the states vary in their characteristics, which could mean that there are different ways of getting the same goal.

As such, it may well be unusefull to standardise indicators across the board.

Differing income levels mean that countries will set different policy priorities and will also have varying degrees of scope for policy action. "In middle-income and high-income countries, ..., relative poverty is highly relevant to policy, while in countries with low average incomes higher priority is often given to preventing absolute income poverty" [5].

Which indicators are relevant will also depend largely on the economic structure of the country.

The economic sectors affects also of note "patterns and intensity of pollution, land consumption and an economy's reliance on imports or exports." A country's natural resource base is another aspect that is key to a set of indicators.

5. Conclusions

A well established goal regarding greening value chains must be followed by customised indicators. On the one hand these make possible to pursue different development paths, and also" make these paths compatible with a country specific green growth agenda." It is not proper, it is not relevant and not efficient for different cultures and economies to work with the same indicators.

These one should be able "to take account of the heterogeneity of the countries while also reflecting both the large degree of overlap and the differences between the green growth concepts." This solution

would ensure at least a certain degree of comparability, but still leave room for different priorities and interpretations of green growth. "Indicators must be able to distinguish between cyclical and structural increases or decreases in green growth indicators. This challenge could be tackled by using a combination of indicators that measure both short-term and long-term changes.„ [5].

"The focus of green growth strategies may vary between countries with different general conditions, which means that specific indicators may be relevant and meaningful to differing degrees depending on the country in question" [5].

In order to make green growth concepts meaningful and attractive to as many countries as possible, customised dashboards, A sets of indicators specific to individual (groups of) countries, can be used.

Compliance with Ethics Requirements. Authors declare that they respect the journal's ethics requirements. Authors declare that they have no conflict of interest and all procedures involving human or animal subjects (if exist) respect the specific regulation and standards.

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