

## CHAPTER V

### Monitoring the sustainable Development Performance: an integrated approach to business management

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Traditionally, development has been identified as growth of Gross National Product (GNP), even connected to the rise in personal incomes, linked with industrialization and technological advances, and pursuing the social progress. According economic theory, development is related to increases in income and production, always involving drastic changes in institutional, social and administrative structures, sometimes even in individual and collective beliefs<sup>2</sup>. Thus, Amartya Sen<sup>3</sup>, the winner of the *Nobel Prize* in economics in 1998, argues that it can be seen as a process of expanding the real freedoms of human being. The traditional approach, based on Gross Domestic Product (GDP) or in Gross National Product, or by individual incomes, can be recognized as insights to ensure and expand the human action towards social welfare and progress. Those freedoms are also dependent on other key determinants such as social and economic facilities, and political and civil rights. Industrialization and technological advances can, by themselves, contribute in a cause-effect relationship to expand the human freedom.

Introduced into the international environment debate during the 1980s, Sustainable Development (SD) crosses the boundaries of economy, environment and society<sup>4</sup>. Thus, it will be aligned in this paper with society knowledge acquisition, transformation and dissemination towards the economic and social growth achievements<sup>5</sup>. The issue of SD has been a concern both, at a macro and microeconomic levels. Several methods have been followed in this scientific field, some of them based on critical theory<sup>6</sup>, and others based on the development of conceptualized models and frameworks<sup>7</sup>.

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<sup>2</sup> M. Todaro, *Introdução à Economia: Uma Visão para o Terceiro Mundo*, 1ª Reimpressão, Rio de Janeiro: Editora Campus, 1981.

<sup>3</sup> A. Sen, *Development as Freedom*, New York: Alfred A. Knopf, Inc., 1999.

<sup>4</sup> C. Searcy, S. Karapetrovic, D. McCartney, Daryl, *Insights from practice – Designing sustainable development indicators: analysis for a case utility*, *Measuring Business Excellence*, Vol. 9, N.º2, 2005, pp.33-41.

<sup>5</sup> I. Nonaka, H. Takeuchi, *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, New York: Oxford University Press, 1995.

<sup>6</sup> M. J. Milne, H. Tregidga, S. Walton, *Words not actions! The ideological role of sustainable development reporting*, *Accounting, Auditing & Accountability Journal*, Vol. 22, n.º8, 2009, pp.1211-1257; D. Springett, *Business Conceptions of Sustainable Development: a perspective from Critical*

As mentioned above, SD is also linked to Knowledge Based Economy (KBE), as determinative of deep changes in the behaviours of individuals, teams and organizations. These knowledge assets have been used to reach sustainable standards of development and growth<sup>8</sup>. The advent of a new economic paradigm is embedded in the need to manage these new resources. The emerging new business models, built up in a global economy throughout complex networks, have its hard nucleus in a basic activity of the modern value chain: the knowledge management and the value creation. Many companies, investing in the most recent technologies, tried to implement and develop solutions in order to achieve sustainable positions through their ability to acquire, develop and transform knowledge into expertise. The same approach has been followed at national levels, searching for an old and unresolved paradigm: the achievement of a social sustainable welfare standard.

At a company level, the production and dissemination of sustainability reports, primarily by listed companies, has contributed to greater awareness of the SD significance. As stated by Milne *et al.*<sup>9</sup>, both individuals and through organized initiatives, businesses are responding by demanding for behaviors changes, consistent with environment and social responsibility. Those companies are usually requested to disseminate to their stakeholders, information about environment and social activities. These reports are prepared by listed companies in order to mitigate the problems derived from the information asymmetry. In non listed companies, that information are prepared and disseminated on a voluntary basis. However, and in both cases, environment and social responsibility activities are performed which, from a strategic point of view, can also be managed and disclosed as a source of potential future returns.

This approach aims to identify the boundaries of sustainability and its application at a country and corporate levels. With this approach, we try to identify the basis for a conceptual scorecard as a dynamic tool in order to monitor the sustainability performance at a macro (country level) and micro (corporate level) scope.

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*Theory, Business Strategy and the Environment*, Vol. 12, 2003, pp.71-86; G. O. Carvalho, *Sustainable Development: is it achievable within the existing international political economy context?*, *Sustainable Development*, N.º9, 2001, pp.61-73.

<sup>7</sup> M. Mohamed; A. Murray, M. Mohamed, *The role of information and communication technology (ICT) in mobilization of sustainable development knowledge: a quantitative evaluation*, *Journal of Knowledge Management*, Vol. 14, N.º5, 2010, pp.744-758; Y. Jabareen, *A new conceptual framework for sustainable development*, *Environment, Development and Sustainability*, Vol. 10, Springer, 2008, pp.179-192; C. Searcy, S. Karapetrovic, D. McCartney, *Insights from practice – Designing sustainable development indicators: analysis for a case utility*, *Measuring Business Excellence*, Vol. 9, N.º2, 2005, pp.33-41; R. Garvare, R. Isaksson, *Sustainable Development: Extending the Scope of Business Excellence Models*, *Measuring Business Excellence*, Vol. 5, n.º 3, 2001, pp.11-15; O. Bergstrom, P. Dobers, *Organizing Sustainable Development: from diffusion to translation*, *Sustainable Development*, N.º8, 2000, pp.167-179.

<sup>8</sup> I. T. Lopes, M. R. O. Martins, J. M. Nunes, *Towards the Knowledge Economy: the technological innovation and education impacts on the value creation process*, *The Electronic Journal of Knowledge Management*, Volume 3, Issue 2, 2005. pp.: 129-138, available online at [www.ejkm.com](http://www.ejkm.com), ISSN 1479-4411.

<sup>9</sup> M. J. Milne, H. Tregidga, S. Walton, *Words not ...*, op. cit.

## 5.1. The boundaries of sustainability

The conceptual world of development aggregates, according Jabareen<sup>10</sup>, seven distinct concepts and derives in an ethical paradox between sustainability and development. In fact, sustainability has several concepts and meanings in its theoretical foundation. It is embedded in a fluid mix of interrelations which is the natural genesis of freedom as argued by Amartya Sen<sup>11</sup>. The next figure will focus on an integrated overview about the sustainable development boundaries and their linkages with the unresolved paradox (sustainability can inhabit, independently of the environments and ideologies). Define what should be sustained is, in its genesis, a complex process, embodied in controversial approaches, and usually identified as a source of contradictions<sup>12</sup>.

This figure 5.1. tries to evidence those contradictions<sup>13</sup> and point out the interrelations between multiple concepts, deriving in a continuous and controversial ethical paradox<sup>14</sup>. Traditionally associated to ecology, sustainability aggregates several domains, apparently contradictory, such as economic growth, social inclusion or even climate changes and renewable energies. Development is, in itself, associated to economic features and interests. And, from the merger of both (economic development and environmental protection), derives the paradox. Hence, the equilibrium between those pillars are affected by human behaviors (individual and collectively) and actions. Interlinked with that paradox, SD aggregates other concepts<sup>15</sup> as: 1. Natural capital stock (tangible assets of development); Equity (its social dimension); Eco-form (the ecological design and human spaces); Integrative management (the merger of economic, environmental and social issues); Utopianism (the desired human habitats); and Political global agenda (the new global disclosure towards sustainable development).

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<sup>10</sup> Y. Jabareen, *A new conceptual framework for sustainable development*, Environment, Development and Sustainability, Vol. 10, Springer, 2008, pp.179-192.

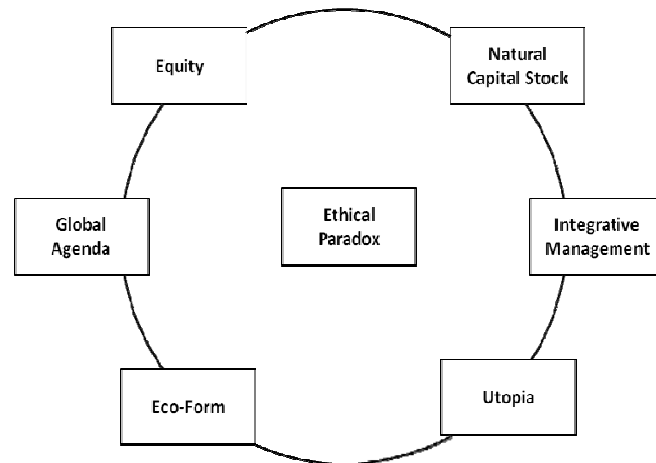
<sup>11</sup> A. Sen, *Development as Freedom*, New York: Alfred A. Knopf, Inc., 1999.

<sup>12</sup> Y. Jabareen, *A new conceptual...*, op. cit.; Y. Jabareen, *A Knowledge map for describing variegated and conflict domains of sustainable development*, Journal of Environmental Planning and Management, Vol. 47, Issue 4, 2004, pp. 623-642; M. R. Redcliff, *Sustainable Development: Exploring the Contradictions*, New York: John Wiley & Sons, 1987.

<sup>13</sup> M. R. Redcliff, *Sustainable...*, op. cit.

<sup>14</sup> Y. Jabareen, *A new conceptual...*, op. cit.

<sup>15</sup> Ibidem.



**Figure 5. 1.** A conceptual framework for of sustainable development  
Source: Jabareen (2008:188)

Sustainable Development is a continuous process by combining three different structural blocks of development: *Economy; Environment and Society*. Gross Domestic Product (GDP) does not reflect, anymore, the SD overview and new performance indicators should be integrated in a dynamic framework which, on a feasible basis, can capture the changes in those three structural pillars. Organizations like OECD and Eurostat, have defined the boundaries of sustainability (Climate change and energy; Consumption and production; Demographic changes, Partnership; Governance; Natural resources; Public health; Social inclusion; Socioeconomic development; and Transport) and have created a list of more than 100 indicators (Growth rate in GDP per capita; Resource productivity; People at-risk-of-poverty; Employment rate of older workers; Health life years; Greenhouse gas emissions; Renewable energy; Energy consumption of transport; Fish catches out of biological limits; among others) with the objective to promote an integrated overview, both at a macro and micro level. In this paper, we will use some of the headline indicators in order to illustrate the European scenario in terms of sustainability headlines.

The transformation process towards SD achievement also depends from an important degree on the use of the new technologies, specially the information and communication technologies<sup>16</sup>. Some indicators suggest that besides expressing the level of integration of the citizens and countries, they equally express the quality of the integration in the knowledge economy. We accept that knowledge can be codified and then stored in a computerized system to be made available on demand. Thus, the main purpose of knowledge management and its role in the sustainable development building up process is the acquisition, capture, transformation, access, diffusion and re(use) of knowledge<sup>17</sup> by individuals and communities (broadly, the

<sup>16</sup> M. Mohamed; A. Murray, M. Mohamed, *The role of information...*, op. cit., pp.744-758.

<sup>17</sup> T. H. Davenport, L. Prusak, Laurence, *Working Knowledge: How Organizations Manage What They Know*, Boston, MA: HBSP, 2000; G. Von Krogh, K. Ichijo, I. Nonaka, *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, New York: Oxford University Press, 2000; I. Nonaka, H. Takeuchi, *The Knowledge Creating Company: How*

entire society). Those activities can be more efficient, depending on the context that allows and facilitates their development, and also depending from the human behaviors changes. Hence, SD is broadly defined as “*the process to reach a steady state where both humanity and nature thrive*”<sup>18</sup> or as the process to meet the needs of the present without compromising the ability of future generations to meet their own needs<sup>19</sup>.

#### *Sustainability at a macroeconomic level*

The deep transformation verified in the economic, environment and social development, requires a framework, which easily translates the real status of the SD. The need to capture the changes operated in this domain, has been one of the main concerns in the achievement of a global development pointer. Similarly to the approaches followed to the Knowledge Economy<sup>20</sup> (Milne *et al.*, 2009; Smith, 2000; Kelly, 1998) analysis, the systematic use of an index system can, on a reliable basis, measure the state of the art for each economy.

The framework followed by Eurostat<sup>21</sup> in the field of SD, aggregates eleven key indicators, integrated in nine (A to I) different themes. Table 5.1 shows the corresponding themes and indicators, some of them used in this paper, in the scope of empirical evidence.

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*Japanese Companies Create the Dynamics of Innovation*, New York: Oxford University Press, 1995; M. Polanyi, *Personal Knowledge: Towards a post-Critical Philosophy*, London: The University of Chicago Press 1958.

<sup>18</sup> R. Garvare, Richard; R. Isaksson, Raine, *Sustainable Development: Extending the Scope of Business Excellence Models*, Measuring Business Excellence, Vol. 5, n. ° 3, 2001, pp.11-15.

<sup>19</sup> WCED – World Commission on Environment and Development, *Our Common Future*, Oxford: Oxford University Press, 1987.

<sup>20</sup> M. J. Milne, H. Tregidga, S. Walton, *Words not...*, op. cit.; K. Smith, “What is the knowledge economy? Knowledge-intensive industries and distributed knowledge bases”, *Innovation Policy in a Knowledge-Based Economy*, European Commission, May.; K. Kelly, *New Rules for the New Economy*, Middlesex: Penguin Books, 1998.

<sup>21</sup> Eurostat (2010). “Monitoring sustainable development in the European Union”, *Sigma - the Bulletin of European Statistics*, 2010/01, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Monitoring\\_sustainable\\_development\\_in\\_the\\_European\\_Union](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Monitoring_sustainable_development_in_the_European_Union), accessed on 18 february 2012.

**Table 5. 1.** Sustainable development indicators

THEME	HEADLINE INDICATOR
A. Socio-economic development	1. Growth rate of real GDP per capita
B. Sustainable consumption and production	2. Resources productivity
C. Social inclusion	3. People at-risk-of-poverty or social exclusion
D. Demographic changes	4. Employment rate of older workers
E. Public health	5. Healthy life years and life expectancy at birth, by gender
F. Climate change and energy	6. Greenhouse gas emissions 7. Share of renewable energy in gross final energy consumption
G. Sustainable transport	8. Energy consumption of transport relative to GDP
H. National resources	9. Common bird index 10. Fish catches taken from stocks outside safe biological limits
I. Global partnership	11. Official development assistance as share of Gross National Income.

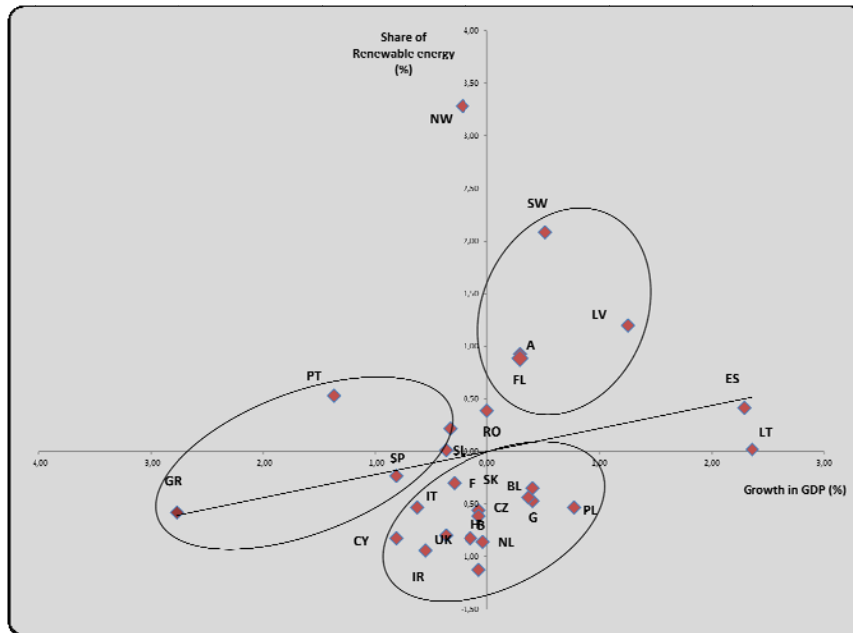
Source: Adapted from Eurostat (2010)

From the table 5. 1, we have selected a sample by convenience of four headline indicators, namely the indicators: Growth rate of real GDP per capita; Resources productivity; people at-risk-of-poverty or social exclusion; and Share of renewable energy in gross final energy consumption. Then, we crossed the growth rate of real GDP per capita with the other three indicators, in order to obtain an overview of the European scenario in some structural themes. The same approach can be followed for all indicators stated in the table above. Complementary, we tried to evidence some of the contradictions set out by Jabareen<sup>22</sup>, in particular between Growth rates of GDP and Renewable energies and Social exclusion.

Comparing the growth of GDP (2009-2011) with the % of renewable energy in final energy consumption (headline indicator n. 07), we clearly conclude that the policies effectively followed are not consistent with national GDP growth rates. All European countries are below the target fixed for renewable energies use. However, some countries have selected the use of renewable energies as a priority. It seems to be the case of some Nordic countries, Austria, Latvia and Portugal.

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<sup>22</sup> Y. Jabareen, *A new conceptual...*, op. cit.

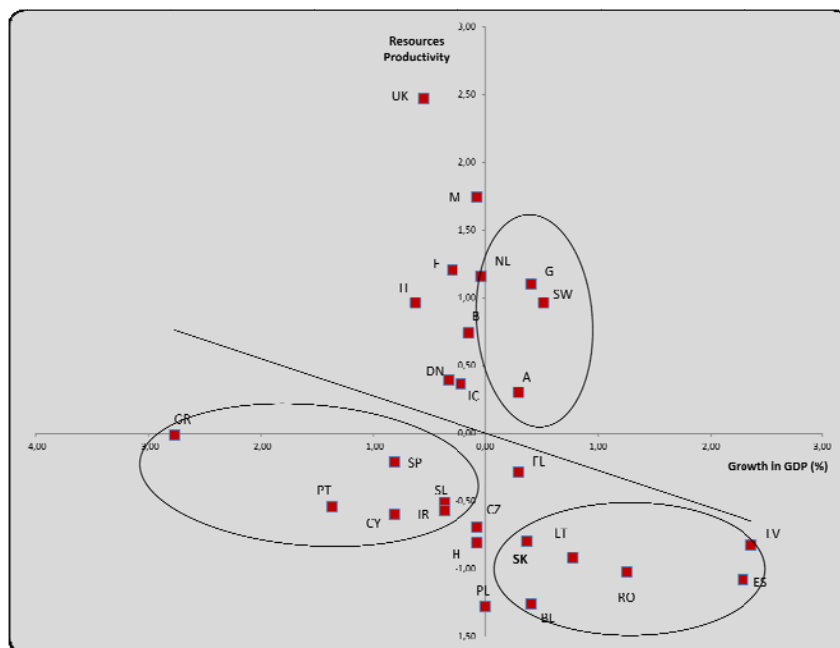


**Figure 5. 2.** Growth of GDP and Share of renewable energy (2009-2010)  
Source: Eurostat (2012).

According graph 5.1, it is possible to identify, three different clusters corresponding to equal distinct stages of evolution towards SD. From a statistical point of view, there is no significant correlation between the variables “*Growth in GDP*” and “*Share of renewable energy*”. This evidence is corroborated by qualitative complementary analysis and supported by literature review. Thus, we can group those countries as follows:

1. Countries (especially Nordic countries) with positive growth rates (above the European average) and evidencing an interesting sharing rate of renewable energies in total of consumption (Sweden, Latvia, Austria, Finland). However, all of them are below the target fixed for 2009-2010.
2. Countries with poor rates of renewable energies use in total consumption (France, United Kingdom, Ireland, Netherlands, among others).
3. Countries with poor rates in GDP growth, even predicting, in 2009/2010, the financial crisis scenario in the south of Europe (Greece, Portugal, and Spain). However, we should emphasize that Portugal is one of the top leaders in the production and consumption of renewable energies.

The results shown in graphs 5.2 and 5.3, presented in the next pages, reflect the correlation between variables “*Growth in GDP*” and “*Resources productivity*” and “*People at-risk-of-poverty or social exclusion*”, respectively. Once more, there is no evidence of a statistical significant correlation between those variables.



**Figure 5. 3.** Growth of GDP and Share of resources productivity (2009-2010)  
Source: Eurostat (2012).

As mentioned before, strong asymmetries can be observed in Europe when we cross both variables. The question stated out by Carvalho<sup>23</sup> about the achievement of SD within the existing international political economy context, still remains valid ten years later. In the author's words "*within the current international political economic system it would be nearly impossible to adopt development strategies that are conducive to truly sustainable development*". We cannot identify a clear trend for the variables under analysis.

The evidence achieved for a macro analysis level reinforces the paradox stated by Jabareen<sup>24</sup>. The trend underlined in Graph 5.3, suggests that the economic growth of GDP is positively correlated with the risk of poverty and social exclusion.

This assertion points out one of the most controversies arising in the context of Digital Economy: the info-exclusion derived from the ICTs access and use.

That evidence highlights one of the contradictions within the themes of SD, and obviously requires further investigation. The same level of asymmetries can be observed if we cross the other seven indicators shown in table 5.1. In fact, the field of sustainable development is embodied in complexities<sup>25</sup> and in vague concepts<sup>26</sup>.

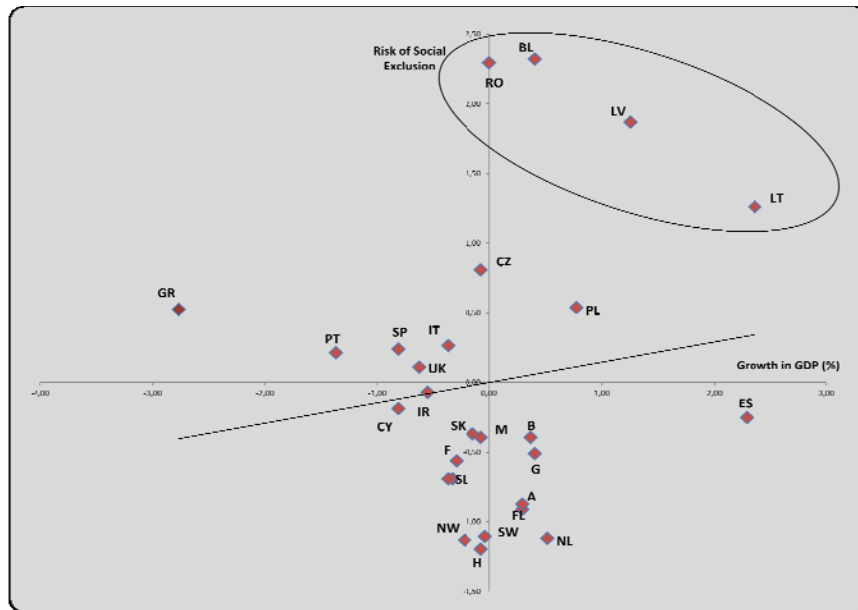
<sup>23</sup> G. O. Carvalho, *Sustainable Development: is it achievable within the existing international political economy context?*, Sustainable Development, N.º9, 2001, pp.61.

<sup>24</sup> Y. Jabareen, *A new conceptual...*, op. cit.

<sup>25</sup> Y. Jabareen, Yosef, *A Knowledge map...*, op. cit.

<sup>26</sup> D. Gow, *Poverty and natural resources: principles for environment management and sustainable development*, Environmental Impact Assessment Review, 12 (1/2),1992, pp.49-65.

Additionally, conceptions are largely based in eco-modernism and political sustainability, as referred by Springett<sup>27</sup>.



**Figure 5. 4. Growth of GDP and % of People at-risk-of-poverty (2009-2010)**  
Source: Eurostat (2012).

The divergences between countries, in respect to SD standards, consolidate the importance of defining an integrated strategy in order to gradually eliminate those asymmetries. Moreover, the results stated above seem to evidence the contradictions underlined by Jabareen<sup>28</sup> about interrelations between the concepts that broadly support the scope of sustainability. Or, as mentioned by Carvalho<sup>29</sup> “Such a paradigm shift would necessitate changes in the structure of the international political economy since it would probably require an equitable and stable international economic order in which to function”. We strongly corroborate the idea that a new economic order is required if we want to mitigate those contradictions, strongly derived from human behaviors, and from national and corporate economic goals. In this field, we felt that we produce more words than actions as we still remain below the goals fixed by governments and states. Economy, environment and society seem to be wheels of a system that does not promote the convergence within countries in terms of global sustainability.

#### *Sustainability at a microeconomic level*

Sustainability, at a micro or corporate level, can be understood, similarly to the approach followed at a country level, as value creation process towards the long

<sup>27</sup> D. Springett, *Business Conceptions of Sustainable Development: a perspective from Critical Theory*, Business Strategy and the Environment, Vol. 12, pp.71-86.

<sup>28</sup> Y. Jabareen, *A new conceptual....*, op. cit.

<sup>29</sup> G. O. Carvalho, *Sustainable....*, op. cit., pp. 70.

range achievements (turnover and other financial features). It is also aligned with knowledge management and the processes used to create, capture, transform and disseminate it to stakeholders, most of them included in the sustainability reports. Derived from the minds of workers and their values<sup>30</sup>, knowledge is recognized as information, beliefs and commitment<sup>31</sup>. As stated by Davenport and Prusak (2000:5): "knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms". Thus, knowledge arises as a dynamic learning process that occurs between individuals, teams, organisations and communities. Hence, SD will be explored in this paper, aligning three different structural blocks: Value Creation (Economic Growth); Environment Responsibility (Environmental protection and Eco-efficiency; and Social Responsibility (Social progress and welfare).

Monitoring the sustainability performance indicators, associated to the existing management and measurement systems, is an important step in making the concept effective at a corporate level. As mentioned by Dudok van Heel *et al.*<sup>32</sup> we should resolve the lack of robust measures of corporate sustainability performance. Searcy *et al.*<sup>33</sup>, in the design of a system of sustainable development, have drawn three important guidelines: 1. Indicators should be useful, both for internal and external stakeholders; 2. Indicators should be built based on internal and external initiatives; and 3. Existing indicators should not widely used in management decision making. Nowadays, companies usually monitor some key performance indicators in their management systems. This is the case of the sustainability reports produced and disclosed by listed companies.

Measuring the performance also appears, at a corporate level, associated to the processes of acquisition, capture, transformation, access, diffusion and re(use) of knowledge<sup>34</sup>. To create insights, skills and relationship is probably the key objective of any knowledge acquisition process. However, company's culture should be built on knowledge acquisition, sharing and use processes which drive the technology choices inside the companies. A set of metrics (financial and non-financial) is required that measure the value creation resulting from those activities.

A *Balanced Scorecard*<sup>35</sup> approach has been followed in certain companies, sometimes by adding new perspectives (environmental and social responsibilities) to the traditional framework. It provides stakeholders with a comprehensive framework that translates a company's vision and strategy into a coherent set of performance

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<sup>30</sup> T. H. Davenport, L. Prusak, Laurence, *Working...*, *op. cit.*

<sup>31</sup> I. Nonaka, H. Takeuchi, *The Knowledge...*, *op. cit.*

<sup>32</sup> O. Dudok Von Heel, J. Elkington, S. Fennell, F. Van Dijk, *Buried Treasure: Uncovering the Business Case for Corporate Sustainability*, London, 2001.

<sup>33</sup> C. Searcy, S. Karapetrovic, D. McCartney, *Insights from...*, *op. cit.*

<sup>34</sup> M. J. Milne, H. Tregidga, S. Walton, *Words not...*, *op. cit.*; T. H. Davenport, L. Prusak, Laurence, *Working...*, *op. cit.*; G. Von Krogh, K. Ichijo, I. Nonaka, *Enabling Knowledge...*, *op. cit.*; O. Bergstrom, P. Dobers, *Organizing Sustainable...*, *op. cit.*

<sup>35</sup> R. S. Kaplan, D. P. Norton, *The Balanced Scorecard: Translating Strategy into Action*, Boston, MA: HBS, 1996.

measures. These measures should be simple, widely accepted, directly linked to the three pillars of SD, and directly tied to relevant internal initiatives<sup>36</sup>. In order to illustrate the main key performance indicators used to monitor the structural blocks of sustainability, we present in the next topic an overview of the non financial companies which currently integrate the Portuguese Stock Index 20 (PSI 20).

#### *Sustainability at a microeconomic level*

The Lisbon Stock Exchange (LSE) was founded on 1<sup>st</sup> January 1769, and since there, several modifications have been occurred. The merger with Euronext, agreed on January 2002, has resulted in the change of its name into Euronext Lisbon on February 6, 2002. Since this date, members of Euronext Lisbon have been given the opportunity to negotiate all products of the spot market admitted to trading on other financial markets, including Paris (Euronext Paris), Amsterdam (Euronext Amsterdam) and Brussels (Euronext Brussels). Thus, there are several Euronext indexes resulting from such transformations, in particular the index that supports part of the empirical evidence shown in this paper.

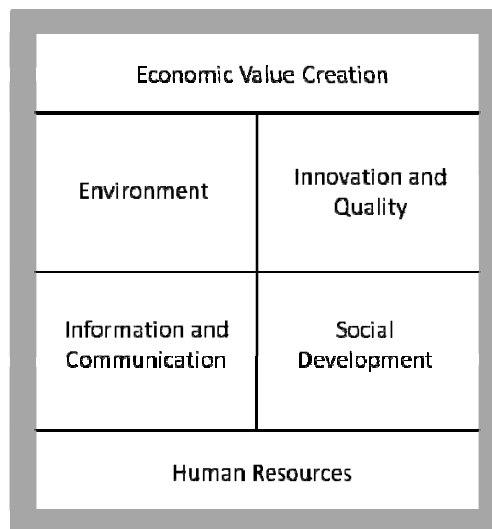
Listed companies (16 non financial companies and 4 financial companies), currently integrating the PSI 20, report to their stakeholders, on a regular basis, sustainability information, including the activities effectively carried out. Through a content analysis to those reports (CMVM, 2012), we evidence, in the figure 2, the main vectors of sustainability. The content of these reports are normally produced using the corporate Management Information System on Sustainability, which complements the Management Information System that prepares the financial information for the annual reports and accounts.

We have identified six important vectors that drive sustainability: Economic Value Creation; Environment; Innovation and Quality; Social Development; Information and Communication; and Human Resources. Broadly, companies are involved in several certification programs (v.g. PEFC - *Program for the Endorsement of Forest Certification*; ISO 14001 Certification, etc), and in multiple social activities (v.g. Sponsorship to culture, health, sports and social economy organizations, among others). Complementarily, most of the companies under analysis have declared biodiversity as a strategic area of their activities. One of them as disclosed, in its sustainability report, the following principles: “1) *To develop biodiversity management capacity in the design, construction and operation stages of motorways, and to include the assessment of its impact on biodiversity, aimed at minimizing the negative impacts arising from its activity, enhancing positive impacts and compensating inevitable impacts*; 2) *To foment knowledge about biodiversity and to strengthen collaboration between the academic-scientific sector and the corporate world by carrying out studies and initiatives that can be applied in the company’s activity*; and 3) *To implement regular and transparent reporting of the Group’s performance in terms of biodiversity, verified by independent entities, as well as developing internal and external communication channels that reflect the*

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<sup>36</sup> C. Searcy, S. Karapetrovic, D. McCartney, *Insights from...*, op. cit.

*real activity of the company in this matter, in order to make stakeholders aware and involve them in the adoption of the best environmental management practices*<sup>37</sup>. It seems that environment issues are always included in the companies' main priorities.



**Figure 5. 5.** Vectors of sustainability

All of those themes are interlinked in a cause-effect relationship despite their boundaries not clearly defined. However, listed companies have structured their sustainability reports according the following principles and guidelines: Environment and energetic practices; Social development and local communities' intervention; Innovation, quality and certification; Information and communication with stakeholders; Human resources protection and values; and Economic value creation. The identification of those main vectors supports the basis for a sustainability scorecard framework, as we will suggest in the next section.

## 5.2. The basis for an sustainability scorecard

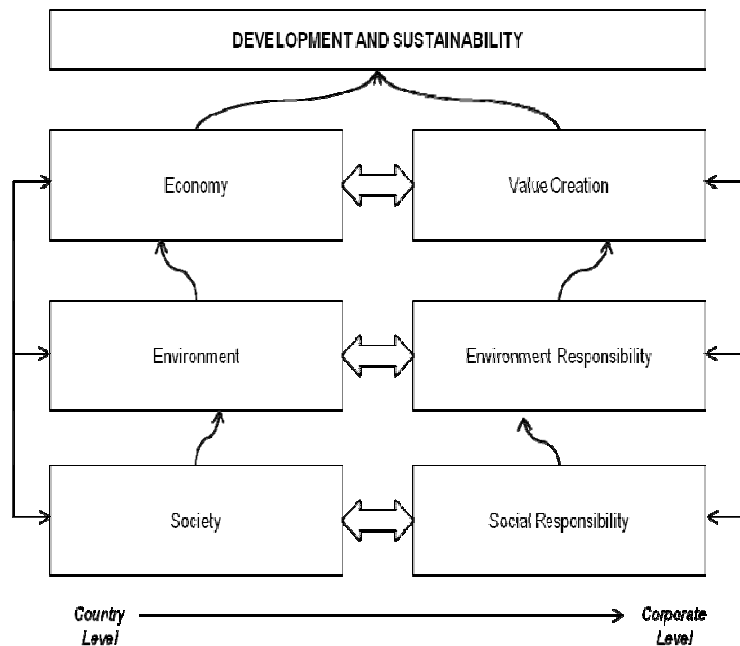
Balanced Scorecard<sup>38</sup> *“retains financial measurement as a critical summary of managerial and business performance, but it highlights a more general and integrated set of measurements that link current customer, internal process, and employee and system performance to long-term financial success”*. Therefore, this tool is viewed as a measurement, communication and strategic management system using complex cause-effect chain relations<sup>39</sup>. It was traditionally developed through four perspectives – Financial, Customer, Internal Processes, Learning and Growth –

<sup>37</sup> BRISA (2010). Sustainability Report 2010, <http://www.brisa.pt/PresentationLayer/conteudoGrande.aspx?menuid=260>, (15.01.2012).

<sup>38</sup> R. S. Kaplan, D. P. Norton, *The Balanced...*, *op. cit.*, p.21.

<sup>39</sup> P. R. Niven, *Balanced Scorecard Step-By-Step: Maximizing Performance and Maintaining Results*, New York: John Wiley & Sons, 2002.

and, according available literature, it should evidence a mix of outcome measures and performance drivers, strongly aligned with business strategy. Broadly, as stated by Kaplan and Norton<sup>40</sup>, the scorecard creates a holistic model of the strategy that allows individuals and groups to capture and understand how they can contribute to organisational developments. It allows companies to align strategies, identify targets and evaluate on an ongoing basis the “*state-of-the-art*” about any particular dimension. Based on that approach, we propose in this section an integrated framework for SD monitoring, at a country and corporate level.



**Figure 5. 6. A theoretical sustainability strategic map**

Despite their intrinsic differences, we found a clear match between SD themes, both at a macro and micro level. However, companies define and implement strategies to grant a comfortable economic and strategic positioning, in particular in relation to their direct competitors. At a macro level, sustainability is more dependent from common agreements and rules, most of them emerging within international political policies.

Parmenter<sup>41</sup> has established a set of key performance indicators which can be widely used at a corporate level. Based on the PSI 20 companies, and according their sustainability reports, we propose a set of key performance indicators, duly integrated in each sustainability theme. This framework and the set of indicators suggested have followed the balanced scorecard philosophy as stated by Kaplan and

<sup>40</sup> R. S. Kaplan, D. P. Norton, *The Balanced...*, *op. cit.*

<sup>41</sup> D. Parmenter, *Key Performance Indicators: Developing, Implementing, and Using Winning KPIs*, New Jersey: John Wiley & Sons, 2007, pp. 203-231.

Norton<sup>42</sup>. As a dynamic tool, themes (perspectives) and performance indicators should be adjusted whenever news insights arise.

<b>ECONOMIC VALUE CREATION</b>	
<ul style="list-style-type: none"> <li>• Economic Value Added (€)</li> <li>• Operating Costs (€)</li> <li>• Net Operating Profit (€)</li> <li>• Staff Costs (€)</li> <li>• Δ EBITDA (%)</li> </ul>	<ul style="list-style-type: none"> <li>• Cash Value Added (€)</li> <li>• Revenues from New Products or Services (€)</li> <li>• Gross Margin by Business (%)</li> <li>• Return on Net Asset Value (%)</li> <li>• Return on Equity (%)</li> </ul>
<p style="text-align: center;"><b>ENVIRONMENT</b></p> <ul style="list-style-type: none"> <li>• GHG Emissions (tCO<sub>2sg</sub>)</li> <li>• Electricity and Water Consumption (GJ or m<sup>3</sup>)</li> <li>• Fuel consumption (lt)</li> <li>• Waste and Scrap Produced (kg)</li> <li>• Rate of Renewable Energy Use (% of total consumption)</li> <li>• Investment in Electronic Documents Management Systems (€)</li> <li>• Prevention and Environmental Management Costs (€)</li> </ul>	<p style="text-align: center;"><b>INNOVATION AND QUALITY</b></p> <ul style="list-style-type: none"> <li>• R&amp;D Investments (€)</li> <li>• Certification (v.g. ISO 9001; ISO 14001, PEFC)</li> <li>• New Products or Services (#)</li> <li>• Awards (#)</li> <li>• Investments in RDI Systems</li> </ul>
<p style="text-align: center;"><b>INFORMATION AND COMMUNICATION</b></p> <ul style="list-style-type: none"> <li>• Investments in Knowledge Management Systems (€)</li> <li>• Informative channels with stakeholders (#)</li> <li>• Information Technologies Capacity (GB)</li> </ul>	<p style="text-align: center;"><b>SOCIAL DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Investments in Local Communities – Donations (€)</li> <li>• Investments in Local Communities – Public Service (€)</li> <li>• Number of Field Initiatives (#)</li> <li>• Investment in Promoting S. Responsibility (€)</li> <li>• Partnership agreements (#)</li> <li>• Sponsorship to Sports, Culture and Science (€)</li> <li>• Local Residents in Total Workforce (#)</li> </ul>
<b>HUMAN RESOURCES</b>	
<ul style="list-style-type: none"> <li>• Turnover rates (%)</li> <li>• Average hours training per employee (h)</li> <li>• Investments in Health and Safety (€)</li> </ul>	<ul style="list-style-type: none"> <li>• Rate of Absenteeism (%)</li> <li>• Accidents at Work (#)</li> <li>• Human Economic Value Added (€)</li> </ul>

Figure 5. 7. Sustainable development scorecard

The development of indicators can be a complex process. Thus, it should be designed using a systematic and holistic perspective<sup>43</sup>. Internal and external experts involvement are required in order to identify a set of indicators that really matches the stakeholders' needs. Figure 5.7 evidences our proposal for a sustainable development scorecard, based on the assertions stated and explored by Kaplan and Norton<sup>44</sup>.

The Balanced Scorecard is, in words of their creators, more than a tactical or an operational measurement system because companies use it to manage their strategies over their long run<sup>45</sup>. Niven<sup>46</sup> describe it as a “*carefully selected set of measures derived from an organization’s strategy*”. We believe that sustainability

<sup>42</sup> R. S. Kaplan, D. P. Norton, *The Balanced...*, op. cit.

<sup>43</sup> C. Searcy, S. Karapetrovic, D. McCartney, *Insights from...*, op. cit.

<sup>44</sup> R. S. Kaplan, D. P. Norton, *The Balanced...*, op. cit.

<sup>45</sup> Ibidem.

<sup>46</sup> P. R. Niven, *Balanced Scorecard...*, op. cit., p. 12.

integrates, in the long run, all of these issues towards an integrated value creation process.

### 5.3. Final remarks

Multiple interpretations and practices can be found in the scope of sustainable development. Their boundaries are vague and their vectors are linked to multilateral cause-effect chains. The intrinsic paradox appears in the current literature as a never ending story and as an unresolved paradigm. However, it allows us to identify its structure and to establish a systematic and dynamic framework for its performance analysis.

At a corporate level, sustainability is based on several strategic vectors: economic value creation, innovation and quality, social development, environment, information and communication, and human resources. However, all those pillars derive from the macro level approach. As largely cited and explained in the scientific literature, sustainability derives from three different axes: Economic growth, Environment protection and Social progress. These axes can be used as a catalyst for individual and collective change, promoting eco-efficiency, innovation and entrepreneurship.

As mentioned by Moahmed *et al.*<sup>47</sup> “*Sustainable Development decisions in the existing knowledge economy are based on very extensive and heterogeneous knowledge fundamentals. ICTs have been one of the factors that created such voluminous information challenges, but also offer a range of opportunities for harnessing information to improve sustainability*”. The search for integrated knowledge management systems is also, in this field, a way ahead to value creation and for the economic sustainability achievements in the long run. Those technologies allow stakeholders for a deep integration in the entire value system and, therefore, contribute for the asymmetries mitigation.

As a dynamic tool, a scorecard is never complete. World (economies, environments and societies) is changing, albeit sometimes quietly, both at an international and domestic level. The framework and the indicators suggested in this paper are just a contribution for the individual and collective mindset. On behalf of future generations!

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<sup>47</sup> M. Mohamed; A. Murray, M. Mohamed, *The role of information...*, op. cit., p. 750.