SUSTAINABLE DEVELOPMENT: FROM AN ABSOLUTE POINT OF VIEW TO A RELATIVE ONE

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ABSTRACT
Purpose: the aim is to present a concept of relative sustainable development that is linked to a specific environment; this concept refers to the Italian mining sector. The need for a new conceptualisation derives from the fact that an absolute value to the sustainable development forces to lose sight of the specific environment in which it was inserted.
Design/Methodology/Approach: on the basis on meetings conducted with professionals of the mining sector, a model that describes the economic environment has been developed. In addition, specific problems that characterise the Italian case (e.g. the drop in mining production, the poor professional training, the anachronistic set of rules, the syndrome NIMBY, the poor dissemination of mining culture) have been considered.
FINDINGS: it has been demonstrated that the sustainable development is a relative concept which is inevitably linked to the context. In other words, an unequivocal definition of the concept does not exist. In fact, different definitions are possible on the basis of the importance that is given to economic, environmental and social principles.
Originality/Value: differently than before, sustainable development is examined considering the linked environment, not only as a set of natural resources but as a system composed by actors involved in the economic environment which includes a stated political order, a level of technology, and stakeholders. Furthermore, a solution to the problems affecting the Italian mining sector is suggested: i.e. an independent and permanent comparison table with a Scientific Committee that gives support to policymakers, disseminate culture in the local communities and harmonize the set of rules etc. would be useful.
KEY WORDS Sustainable development | economic environment model | mining activity.
CLASSIFICATION Conceptual paper.

1. Introduction
The use of natural resources was born in prehistoric times and the development of their exploitation and transformation has been, and keeps on be, the engine of human progress. The question of sustainability arises
since the taking of resources from the environment and the continuous polluting emissions might lead to a collapse in the ability to reproduce the resources and, consequently, a breakdown of the ecosystem. That is why scholars analyzed natural, social, economic and productive processes in order to identify practical solutions in light of the extensive network of relationships that characterizes the set of economic agents.

From the review of the literature many definitions of sustainable development emerge: for example, the World Commission on Environment and Development in 1987 defined sustainable development as a development of economic activities that would take in environmental incompatibility and that would satisfy “the needs of present generations without compromising the ability for future ones to fulfil their necessities” (Brutland report, 1987). In 2002 Casoni and Polidori instead, referring much more to the economic system, identified sustainable development as the design of an economic and social system that will assure over time the increase in real incomes, and therefore the objective of growth concerning levels of education, health services etc. In other words, all that might improve the quality of life and the factors that contribute to it (including the environment) (Casoni, Polidori 2002).

In order to carry out a study on a specific context, it has been chosen to analyze the mining sector because it is strongly linked to a particular territory in which the cultivation is day by day carried out. The connection concerns the location of the land itself, the alteration of the surrounding landscape and the global implications of mining activities. Firstly, the location of these activities is strong related to the presence of cultivable mineral deposits. Secondly, the mining operations inevitably impact on the environment, the landscape and affect people exposed to different kind of emissions (e.g. noise, powders, etc.). Finally, this particular industry has significant global implications because of its impact on the economy of many developed countries, and it is gaining increasing importance in many developing countries. As a consequence, it is clear that the environmental, social and economic consequences of mining activity affect in different, but intertwined, ways both the most advanced countries and the developing ones. In addition to the aforementioned key factors, the mining sector is fundamental for civil development of each country; in effect, everybody needs an average of 2000 tons of minerals, distributed heterogeneously, during his lifetime. For example, phones, microphones, computers (just to mention a few examples) are made with a specific raw material; thus, the mining sector permeates people’s lives. Despite this sector is crucial and strategic, it is not well known and not
often studied. This paper tries to fill this gap, most strongly felt by field operators, and suggest a model to analyze the complex systems of the actors involved, explore the particular problems afflicting a specific context (the Italian one) and propose an operational solution to solve them.

2. The economic environment

The definitions of sustainability cited in the previous paragraph take into account sustainability regardless of the individual environmental context. Those definitions give an absolute value to the concept, thus losing sight of the specific environment in which it is inserted. It should be noted that here the environment does not only refer to the set of natural resources but, according to Porter (1982), the complex of stakeholders involved in the economic environment.

The goal is to present a template synthesis that represents actors involved in the sector both in environmental and corporate level, their roles, responsibilities, constraints and opportunities for sustainable development of mining.

Building the model, two macro levels of analysis will be presented: the environmental level, involving groups such as institutions and local community, and a corporate one that has to cover the costs of environmental responsibility among which there are the compliance to legislation, the administrative burdens, research and innovations, the monitoring system of environmental impacts, the performance improvement, the integration of environmental themes in decision making, the awareness within companies, the communication and the stakeholder engagement (Di Gregorio et al., 2006).

Firstly, within the environment level – that includes clearly the environment in the strict sense (like a set of resources) - institutions have got at least three levels of decision making, European Community institutions, central bodies and organizations of the State, institutions or organizations of Regional Authorities (Provinces, Metropolitan Areas, Mountain Communities and Municipalities) that have received legitimacy to operate from the political mandate given by voters of the local community. In addition of this, each sphere of decision-making is not separate from the others and among them there is a network of information and operational flows.

Secondly, from the dialogue between the different institutions and between the individual institution and the community, environmental requirements arise and they have direct influence on the corporate level in terms of technical limits on the use of renewable energy and on the secu-
rity with checks and, in case, penalties for those with non-compliance. In particular, requirements resulting from the dialogue between institutions and organizations have a double impact on the company, in terms of both cost (certain values) and benefits that manifest themselves in a probabilistic way. Costs can be attributable to two different sources: operational procedures and the development processes. The former are represented by standard behavioural protocols that have to be respected, while the latter refers to strategic investments of the firm such as the introduction of new high technology machinery or the training of skilled labour. Benefits are represented primarily by avoiding administrative fines, the present value of non-social damage and lack of legal action brought by third parties.

Communication activities, depending on the location of the recipients of information, could have an internal or external value. The internal reporting have to find and process data, to warrant compliance with statutory requirements, to define the aims that the company intends to achieve, to verify the achievement of established goals. The valence of external reporting consist of data collections that the company produce in order to communicate its environmental management activities to internal and external stakeholders (Cisi 2003). These tools, on the basis of their purpose, are mere optional corporate communication or mandatory communication imposed by law.

Each firm can evaluate earlier the trade-off between costs and benefits in order to make decisions that will be able to maintain the economic equilibrium of survival. In some cases these decisions can drive the company towards proactive choices that both increase the competitive ability of the company in the sector and anticipate possible new indications of the legislator.

In other words, firms may opt for an active strategic behaviour, based on anticipation of changes with creative behaviours, or passive and adaptive against external variables that are uncontrollable and unpredictable.

For completeness, it is useful to remember that in the sector there are competitive dynamics between the actors directly involved in mining. In fact, each firm operate in a task environment according to Porter, made by suppliers, intermediaries, customers and competitors on which the company may have a strong influence, in contrast to the environment which is considered the set of external variables on which the firm has no chance to act.

The model just presented can be summarized in the following figure:
3. Problems of the economic environment: the Italian case

What is the situation in Italy today? Contrary to what happens in most parts of Europe where the policy on raw materials has a national importance, in Italy there is a huge shortage in this area. Currently the main problems affecting the sector are summarized in: outdated regulatory framework, immoderate decentralisation after the constitutional reform, slow authorized system, drop in mining production and rise in imports, lack of education for future professionals, NIMBY syndrome prevalent among the community.

The legislation which relates to mining, although it have been changed, still bases on the Royal Decree 1443 of 1927. This Decree, issued nearly a century ago, has completely different aims referring to the use of raw materials in comparison with the present ones, but maintains his weight and influence. Nowadays it is beginning to be strongly negative and conditions the whole development of the legislation. In fact, there is a distinction between quarries and mines dating back to the requirements of a century ago: the mines were identified as deposits of strategic mineral material for
that time, the quarries, however, as material with marginal interest. Now the distinction is completely baseless because, first, many quarry materials have got much more importance than mine ones, and secondly, quantitatively, quarry represents almost all the mining activities in Italy.

In Italy with the reform of Title V of the Constitution, there has been a strong thrust towards decentralization that has led to disorder in the regional legislation in absence of strong regulatory constraints. In fact, this constraints are characterized by an attention only to the problems of single Regions (the territory of Italy is divided into 21 Regions), without a national policy on raw materials.

Regions, according to the logic of the reform, should become governance institutions, shifting management skills at the closest level to the resolution of the problem. However it happened that the State which should give guidelines, was involved in administrative and territorial control with great effort but without resources. Instead the Regions have done improperly the raw materials procurement policy with the instrument of final veto, without the true understanding of the phenomenon.

It would be desirable that the State will give the guidelines and then will leave the actors of the territory the task of develop and control them. In other words, the Regions and the Local Authorities should act operationally while the State should guarantee representation in international bodies, coordinate relations with the European Union, execute tasks to ensure the realization of obligations by the Treaty of European Union and by international agreements.

This system, however, requires coordination between the various players because everyone has their own regulations or legislative functions. That is why it is necessary homogenize regulations – as well as improve them - creating the conditions to guide mining activities in Italy.

At the environmental level, Italian Public Administrations are facing problems, including combining the real needs of companies with the environmental ones, related to the use of the land. In fact administrations are the public institutional interfaces of the mining companies, and perform the duties of protecting the territory. Nowadays it sometimes happens that some of them move between permissiveness and blockade against the mining, activity that can not always be said to be “popular” among voters.

In Italy also are not rarely cases in which Public Administrations are unclear on timing, on documentation required, on people to turn etc. The demand for raw materials today is constantly increasing and this pushes producers to invest but only later they adapt their firms to existing regulations. A slow system of authorization means that small or medium sized entrepre-
neurs are forced to chase system of authorization for months and years, in the hands of Municipalities, Provinces and Regions, between one and the other department. As a result, in some cases, the extreme solution is to abandon the enterprise and invest abroad becoming importers to meet demand and do not lose customers. This vicious circle harms the country that loses investment and the corresponding economic activity. This provoke in Italy, but also in Europe, an overall drop in mining production in the face of a steady increase in the use of raw materials. In the latest years in the European Community there has been a decline of mining production, not only because the deposits are increasingly depleted but also because operating costs have risen and it became much easier to export the direct consequences of mining activity (e.g. the emissions, the alteration of the surrounding landscape etc.) abroad. This may be the cause that led to the closure or the stand-by to many installations. In fact, from the comparison between import and export a greater presence of tonnes imports rather than exports is visible (Fig.2).

![Fig. 2 - A comparison of the Import-Export quantity (t)](image)

Source: Foreign Trade, ISTAT data

However, what is more interesting is that the exports of product in terms of value expressed in thousands of Euro have remained constant over the years, while imports have tripled (Fig. 3).
Hence the increasing dependence of the European Community on foreign countries. In fact the EU is a net importer of many minerals: it is heavily dependent on foreign countries for metals and, even more, for high-tech metals essential to the development of new technologies and able to provide productions with low environmental impact. For example, Germany - a nation of very strong mining traditions - in recent years has been forced to close several mines. Now, the German State is considering a strong restart of their production to avoid paying supplies of strategic minerals (iron, steel, light metals and the noble metals refiners, etc.) from abroad. However the German context sees the country pull itself two thirds of its requirements. This means there are also metals that are sold abroad. Also, it is reported that there are many requests for permission to search in the countries of the former DDR, once a Soviet satellite. They were used to obtain raw materials in exchange for technology from the Soviet Union and they are now rediscovering in their territory deposits that were not adequately exploited in the past. This is because they have, contrary to what happens in Italy, a mining culture, prestigious schools and well-known techniques that are able to pass/teach to the next generation.

This loss of cultural diffusion is another problem for the mining sector in Italy. In fact there are fewer foreign students in Italian universities than in the past. In fact, they used to come because they believed the country was technologically advanced in the field of mining and relatively cheap to
live. Instead, in all - or almost - degree programs in recent are absolutely missing the word “mines” or “mining”. It has ceased to invest in the training of individuals, including foreigners, to spread and enrich the geo-mining culture.

This is another Italian problem because the training, if appropriate, allowing people to develop skills; In fact, only with prepared people there is a greater guarantee of development projects in an accurate and precise way. In Italy instead there are many materials in landfill that are still reusable and there are more numerous cases of projects that are badly made. That is why it needs to change - thanks to the university world which certainly create opinion - the methodology undertaken in order to rediscover the mining and quarrying activities in Italy, with the consequent positive impact on the various local communities. In fact, the use of land is an issue that is becoming increasingly important, both in the EU ambit both in decentralized one.

This is one of the key points: environment is perceived like an higher good and the NIMBY syndrome affects especially mining with the aggravating circumstance that there is a lack of visibility of end use of these materials. In other words, against strategic international, European and even national issues, there is a strong local component referring to a set of diseconomies, of negative externalities that mining sector produce. Where there are benefits and also negative effects concentrated on a territory, generally happens that the activities end up clashing with the obvious factors of conflict and acceptability. Just think that in Lombardia, an Italian Region, the 63% of materials extracted are used in regional boundaries, but only the 1% in the municipality where the extraction takes place. Here is an example that captures the zero interest of the municipality – for the significantly weight of negative impacts - to get inside extractive operations. So, it is necessary find space for participatory policies but also for compensation ones to ensure that these interests (general, strategic and local) may be reconciled with success. Clearly, in this system governance, both horizontal and vertical, becomes crucial: the identification of sites and processes of participation and compensation must be made by a higher government level.

4. A possible solution

For the resolution of the issues highlighted in the economic environment is necessary to encourage meetings with all stakeholders interested in the development of mineral resources and in all that is related to the social and economic development of populations; a permanent comparison table
where those involved can receive information from the central authorities and, secondly, give answers to specific problems.

Beyond the change after the reform of Title V of the Constitution, these activities must reconcile anyway “Rome-centric” and “Brussels-centric” optics. There are these two poles of attraction and it is always necessary keep in mind what happens at the level of central government.

In the formulation of a possible solution, according to the European point of view, it would be desirable:

1. the integration of all aspects of sustainability, leading to provide multi-criteria analysis of all components, trying to find a shared mediation;
2. develop and exploit information and communication that represent a point on which it has not worked enough. In fact the perceptive aspects, information and communication become crucial as well as the activity of feedback, participation and management of consensus;
3. vertical and horizontal integration of all the competences and responsibilities. In fact, if the government does not assume a major responsibility from this point of view, conflict aspects will tend to prevail.

The main actors of this project are therefore:

1. the Ministry that can give indications, address and help in the coordination of the various actors;
2. firms that invest and represent the production;
3. user companies because much of the environmental impact of raw materials is tied to the use and production. For example, even if it is not an industrial mineral, the impact of petrol is in how it is used and not in how it is extracted;
4. Public Administration, in its dual role, authorized and legislation one;
5. Universities that have always been the emblem for scientific research.

Of course, these subjects must have an internal structure that includes a kind of scientific committee, that after listening might discuss issues/requests which come from the sector and then create proposals for submission to the central authority.

In fact, today is completely missing in Italy a reference that decides authoritatively, getting the decisions away from the political premises. The process involves, in a later stage, an accreditation of other subjects and then create an informed opinion and so concretely assist decision makers.

The “head-quarter” to coordinate the new system of governance that is emerging, however, can not reside in an well-defined individual - that it would satisfy its own interests, personal statement or affirmation of his political power - but in entities not clearly attributable to a centrality.

So it may be profitable point to a creation of a community, supported by
a specific web site, where each of the actors can pour their knowledge, their data and documents. Only thus, an aggregation of content accessible to all and chained will be created.

What must be stressed, however, is how this forum should build a network where the different participants can exercise a function of coordination, but certainly not of leadership. The goal is to make a proactive contribution to the sector by promoting knowledge and cultural growth. Cultural growth means a kind of virtuous circle that makes raising the number of partners involved.

The proper way to interpret this comparison table, therefore, is identifying it as a tool, a moment of aggregation to facilitate the establishment of a larger widespread culture among professionals, institutions, businesses, professionals and especially the academic world that in recent years has left the study of business management related to sustainable development only a marginal role.

From this table of comparison technical advices will be developed using increasingly, new technologies, tools like Wikipedia, newsletters, web-tv for online training. Thus, the forum can improve knowledge using communication technologies and computer ones. With this logic it is possible to foster a culture about procedures, issues, about how problems were resolved in other regions and/or regional contexts, through blogs, forums. For example, the logic of Wiki question, with a bottom-up approach, starts from the needs of people and provides solution by who have tackled a problem and has solved it and is encouraged to make a contribution online. In this way there is a gradually increase of the formation.

Operationally, the objectives of the forum are synthesized primarily in providing the policy-maker all the elements in terms of employment, social issues, security of supply and environmental impacts. This project may also contribute to the spread of the idea that mining sector is essential but, certainly, the goal is not to replace - it would be unrealistic and pointless - the central authorities. Additionally, the forum wants to make a contribution to knowledge, promote the cultural growth to the member of the sector in the deep conviction that, compared to a cultural growth, it is easier to find effective and efficient solutions.

A second goal is to provide data and information, including quantitative one, which can often calm conflicting opinions. Indeed, in a dialogue, if there is not support for two opposing argument of objective data - or at least shared data - on whom to negotiate, the final result is often felt into the mere power struggle.

Another objective is the training through courses for public administrators,
also involving the industrial operators that are very important to ensure that companies remain at the mercy of public administrations and their technicians. It would be very important also that they were highly informed about what is happening in the set of rules, in the evolution of the industry and markets. In fact only with the comparison between subjects who have got the same degree of preparation, but different points of view, will make coherent proposals.

In this forum, in addition, ways of informing not only politicians, but especially the general public on the role of raw materials, products and related industrial activity, must be shared. The forum can have the popular role, helping to educate everyone in reassess the role of raw materials and the extractive sector. So, far barriers have found because people are misinformed, and a little because they are exploited. In some cases some activity creates more impact than expected, but many preventive measures could be made if people were more informed about what mining entails.

5. Managerial implications and limitations of research

With the creation of the network that correlates expertise and interests of institutions and companies it is possible to promote the development of the territory in multi-disciplinary perspective. The development of the territory is nowadays the point of convergence between the economic and social sphere which is traditionally considered belonging to different fields (if not opposed). This convergence is accentuated by the fact that the tools of organizations and companies tend to be similar, as well as skills required of the top management and executives of the various operational realities tend to be transversal.

Focusing not only on the compliance with legal obligations or operational decisions, but also on the choices recovery and communication policies, the project aims to deliver benefits mainly to the level of local communities who have an understandable and natural closure to the mining - considered a source of a high environmental impact.

With this solution is also desirable to establish a system of governance, whether vertical or horizontal, taking into account the needs of all actors involved in decision making related to the mining sector.

The research may be improved by the production of quantitative data on a enlarged sample of actors involved. In this way it would possible to underline not only the qualitative aspects but also the quantitative ones. In fact the model was built concerning especially the point of view of field operators at the top of the institutional hierarchy in Italy.
REFERENCES


