

# A FRAMEWORK FOR MONITORING SUSTAINABLE DEVELOPMENT: A CORE SET OF RURAL DEVELOPMENT INDICATORS TO ASSIST THE ASSESSMENT OF DEVELOPING SUSTAINABLE RURAL MINING COMMUNITIES

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**Abstract:** The demise of central planning as the determining feature of national development and therefore, rural development in Less Developed Countries (LDCs), has precipitated a shift in the concepts for measuring success in this new era. The apparent victory of economic liberalism over central planning as the way to development has generated the need for a broader and an in-depth exploration of economic restructuring involving: technological change, transformation of land-use patterns, the division and allocation of labour resources. It's clear that a new approach offering an in-depth and a holistic assessment of the process of sustainable development is needed. This paper aims to explore, and examine the development of a core set of indicators for monitoring progress during the process of implementing neo-liberal economic reforms as a vehicle or strategy in the development of sustainable rural mining communities LDCs. Recent development initiatives in sub-Saharan Africa, for example have been based on laissez-faire economic theory and not on ideas of central planning which have predominated until recently. Any radical change in approach to development is bound to produce both positive and negative effects on process and outcome. As a result, and for the purpose of this paper, attempt is made at developing an assessment

framework with particular reference to rural mining communities, which will propose a set of indicators for the purpose of assessing this new approach to sustainable development.

**Keywords:** Assessment framework; Economic liberalism; Rural economic development; Sustainable rural mining communities; Transformation of land-use pattern.

## I. CONCEPT AND DEFINITION OF SUSTAINABLE DEVELOPMENT

The objective of sustainable development and the integrated nature of global development challenges pose problems for institutions, national and international, that were established on the basis of narrow preoccupations' and compartmentalized concerns. Governments' general response to the speed and scale of global changes has been a reluctance to recognize sufficiently the need to change them. The challenges are both interdependent and integrated, requiring comprehensive approaches and popular participation. Yet most of the institutions facing those challenges tend to be independent, fragmented, working to relatively narrow resources and protecting the environment are institutionally separated from those responsible for managing the economy. The real world of interlocked economic and ecological systems will not

change; the policies and institutions concerned must (WCED, 1987: 9).

The concept of “sustainable development” was first discussed by the World Conservation Union, also the International Union for the Conservation of Nature and Natural Resources (IUCN) in its World Conservation Strategy (IUCN, 1980). It reads: “For development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non – living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions” (IUCN, 1980: 23). The World Conservation Strategy focused on environmental integrity, and recognized the interrelationship between environment, social concerns and economic activity (Adra, 2000). It was only with the Brundtland Commission report Our Common Future (WCED, 1987) did the emphasis on the human side of sustainable development become equal to the emphasis on the environmental and economic sustainability. “Humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations (WCED, 1987: 41). The use of this definition has led many to see sustainable development as having a major focus on intergenerational equity.

Although the brief definition does not explicitly mention the environment or development, the subsequent paragraphs, while rarely quoted, are clear. On development, the report states that human needs are basic and essential; that economic growth—but also equity to share resources with the poor—is required to sustain them; and that equity is encouraged by effective citizen participation (Kates, Parris, and Leiserowitz, 2005). On the environment, the text is also clear: “The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities” (WCED, 1987: 8).

Subsequently, the Brundtland Commission paved the way for the UN Conference on Environment and Development (UNCED), otherwise known as the Earth Summit, in 1992 in Rio de Janeiro. This conference approved a set of five agreements:

- *Agenda 21*: a global plan of action for sustainable development, containing over 100 programme areas, ranging from trade and environment, through agriculture and

desertification to capacity building and technology transfer.

- *The Rio Declaration on Environment and Development* - a statement of 27 key principles to guide the integration of environment and development policies (including the polluter pays, prevention, precautionary and participation principles).
- *The Statement of Principles on Forests* - the first global consensus on the management, conservation and sustainable development of the world's forests.
- *The Framework Convention on Climate Change* - a legally-binding agreement to stabilize greenhouse gases in the atmosphere at levels that will not upset the global climate system.
- *The Convention on Biological Diversity* - a legally-binding agreement to conserve the world's genetic, species and ecosystem diversity and share the benefits of its use in a fair and equitable way (Dalal-Clayton, 2010).

According to Kates, Parris, and Leiserowitz (2005) thus, under the heading “what is to be sustained,” the Summit identified three major categories—nature, life support systems, and community—as well as intermediate categories for each, such as earth, environment, and cultures. Drawing from the surveyed literature, the board found that most commonly, emphasis was placed on life support systems, which defined nature or environment as a source of services for the utilitarian life support of humankind. The study of ecosystem services has strengthened this definition over time. In contrast, some of the sustainable development literature valued nature for its intrinsic value rather than its utility for human beings. There were also parallel demands to sustain cultural diversity, including livelihoods, groups, and places that constitute distinctive and threatened communities. Similarly, there were three quite distinct ideas about what should be developed: people, economy, and society.

Much of the early literature focused on economic development, with productive sectors providing employment, desired consumption, and wealth. More recently, attention has shifted to human development, including an emphasis on values and goals, such as increased life expectancy, education, equity, and opportunity. Finally, the Board on Sustainable Development also identified calls to develop society

that emphasized the values of security and well-being of national states, regions, and institutions as well as the social capital of relationships and community ties (ibid.; Solow, 1992).

A commitment to meet the needs of present and future generations has various implications.

"Meeting the needs of the present" means satisfying:

- *Economic needs* - including access to an adequate livelihood or productive assets; also economic security when unemployed, ill, disabled or otherwise unable to secure a livelihood.
- *Social, cultural and health needs* - including a shelter which is healthy, safe, affordable and secure, within a neighbourhood with provision for piped water, drainage, transport, health care, education and child development, and protection from environmental hazards. Services must meet the specific needs of children and of adults responsible for children (mostly women). Achieving this implies a more equitable distribution of income between nations and, in most cases, within nations.
- *Political needs* - including freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood, within a broader framework which ensures respect for civil and political rights and the implementation of environmental legislation (Dalal-Clayton, 2010).

This malleability allows programs of environment or development; places from local to global; and institutions of government, civil society, business, and industry to each project their interests, hopes, and aspirations onto the banner of sustainable development. Thus the goal of social and economic development must be defined in terms of sustainability in all countries developed or developing, market oriented or centrally planned. Interpretations will vary, must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it (WCED, 1987: 41).

Development economists and economists in particular have tried to analysis the concept of sustainable development through what they consider as "weak" and "strong" sustainability. They are based on the concept that humanity should live on the "interest" of its ecological capital, preserving the capital for future generations. The capital in this instance consists of the natural resource base (renewable and non – renewable), biodiversity and the absorptive capacity of the ecosystem for waste, etc. "Strong" sustainability requires that all resource levels be maintained, and not drawn down. "Weak" sustainability means that some resources are substitutes for others (solar energy for natural gas, for example) and allows substitutions as long as the essential capacity of the ecosystem to support life is not damaged (Pearce, Markandy and Barbier, 1989; Pezzey, 1992).

The discussion about definitions is actually about the different aspects of sustainability. However, there is a common thread, in that the current paradigm of development is not sustainable. Refusing to engage in the ongoing debate about sustainability, this paper argues that the process of sustainable development must incorporate aspects of economic, political, technological change and ecological sustainability along with human well-being, and measurement issues particularly, as they apply to rural mining communities.

## II. THE CONCEPTS OF RURAL COMMUNITY

Adra (2000) suggests that it is important to define the concept of "rural community" as it is the context in which sustainable development framework and projects as it applies to for instance rural mining communities are developed and implemented. Hillery (1955) offers 94 definition of community, most of the definitions include common factors such as geography and social interaction as well as other factors (Dasgupta, 1996). Community could also be expanded to included meanings that transcend geographical boundaries and be formed through common choice or purpose (Garber, 1995; Nelson, 1995). Some argue that community means an experience, a site of common activities, a shared activity, or a group of people with a defined

relationship (Singer, 1991; Leonard, 1994; Ward-Whate, 1994). Inherent within the rural context; the meaning of “community” involves many of the above definitions. Thus, rural community assumes one or more shared physical settings, interests, and activities. Applied to the concept of sustainability, community offers another dimension in the sense that a sustainable community is a community that is able to maintain its capacity to endure economical and social changes in the long term (Bryden, 1994).

Due to the differences between rural communities in the developed and developing world, the definition of the concept of “rural” poses a bigger challenger to researchers involved in rural planning and community development. For example, Bollman and Bigges (1992) write that the ambiguity stems from the fact that “the growing similarities of rural and urban lifestyles in the developed northern hemisphere, relative to the heterogeneity of rural areas make the distinctions between urban and rural more misleading than informative” (Adra, 2000:5). Within the Canadian context, Statistics Canada employs the size of the population to determine whether it is rural or urban. Fuller (1994) presents the transformation of the rural urban divide into a more complex structure and refers to it as the “Arena Society.” These meanings views rural communities through changes in consumption patterns and lifestyles. Hence, the arena society is linked in one way or another to the concept of globalization. Accordingly, the concept of arena society help in deepening the meaning of rural communities and their sustainability through understanding the complexities of rural systems and establishing the link between the past and the present. Through understanding of the trends of change caused by global changes and moving from a linear mode of planning and development to an alternative and creative ways of examining and coping with change (Fuller, 1994).

Afshar (1996) argues that although the concept of arena society describes the rural – urban divide in the developed world, it does not reflect the realities of the sharp differences between the rural and urban settings in the developing world. These incompatibilities could be attributed to the lack of mobility of people and information, as well as the

different lifestyles in the developing world compared with the developed world (Adra, 2000). According to Afshar (1996) different characteristics of rural-urban areas such as the physical environment, density and economy influence the definition and type of planning methods/tools employed in rural land use utilization, transformation and economic development. In Africa, and in particular in Ghana, a rural area or home-town refers to a remote, serene place where one’s ancestor/s resides. Hence, the definition and meaning of the concept of “rural” involves not only geographical, economic variables but sociological underpinnings’ of a people’s culture.

### III. MEASUREMENT AND INDICATOR FRAMEWORK

Measurement is indispensable to make the concept of sustainable development meaningful and operational. Therefore, there are many reasons for measuring progress toward sustainable development, ranging from a general commitment to the environment and sustainable and equitable use of natural, human and social resources through a specific commitment to more efficient government operations and the very concrete commitment to institutional accountability. Thus, measurement helps decision- makers and the public define sustainable development objectives and targets, and assess progress made in meeting those targets (Hammond, Adriaanse, Rodenburg, Bryant and Woodward, 1995; Adra, 2000). The concept “indicator” comes from the Latin word *indicare*, which means “to disclose or point out, to announce or make publicly known, or to estimate or put a price on” (Adriaanse, 1993; Hammond et., 1995). Most existing indicators have been developed for specific reasons. They are environmental, economic, and social and health indicators that are not considered sustainable development indicators per se, but which have explanatory value within the context of sustainable development framework. Complex problems of sustainable development require integrated or interlinked sets of indicators, or an aggregation of indicators themselves. There are few, mostly experimental aggregated indicators that make the linkages among the different issues of sustainable development explicit; the paper develops what it considers a “Heptagonal Framework” for monitoring sustainable rural mining communities particularly, in sub-Saharan Africa. Thus, they have been developed for that purpose and can be considered sustainable development indicators (indices

#### IV. A CORE SET OF RURAL DEVELOPMENT INDICATORS TO ASSIST THE ASSESSMENT OF DEVELOPING SUSTAINABLE RURAL MINING COMMUNITY

According to Henderson (1996), Brophy and Shabecoff (2001) there is the need for redefining what constitutes “quality of measurement” relative to that of the orthodox approach, maintains that models and policies employed in order to make societies friendlier, should be dynamic, interactive and interdisciplinary. Moreover, they point out that any set of indicators that used to measure quality of life and sustainability should incorporate: technology assessment, environmental and social impact analysis, risk assessment, game and chaos theories or models.

Each end of the heptagon within the sphere represents aspects of this paper’s chosen five conceptual and theoretical frameworks to assist the development of sustainable rural mining communities. Within this sphere are five suggested dimensions of sustainable development \_\_ quadrants hanging over the human dimension (community). Thus, the model of a heptagonal framework is intended to be sufficient and efficient for the advancement and enlightenment of the tenants’ of sustainable development. It is intended to widen the scope by providing a framework in which investigations and analysis of inter-sectoral linkages within and, between mining and that of the non – farming sector could be carried out organically. They include aspects of the theoretical framework of labour market segmentation; the conceptual framework of new –institutional economics, sustainable livelihoods, political ecology and the theoretical framework of general systems theory. These body of theories to a degree can fully account for the essential dynamic interactions of key institutions of economic and non – economic (socio – cultural) and how they have solved structural problems of transformation (land and natural resource utilization); how they emerged, and have transmitted change in rural mining communities.

Swift (1993) and Robbins (2004) respectively, suggest that political ecology is an attempt at investigating the dialectic between human relationships in communities and their natural and social environments \_\_ quadrant D: environmental category; quadrant C: institutional category. This approach will enable one to explore the contextual

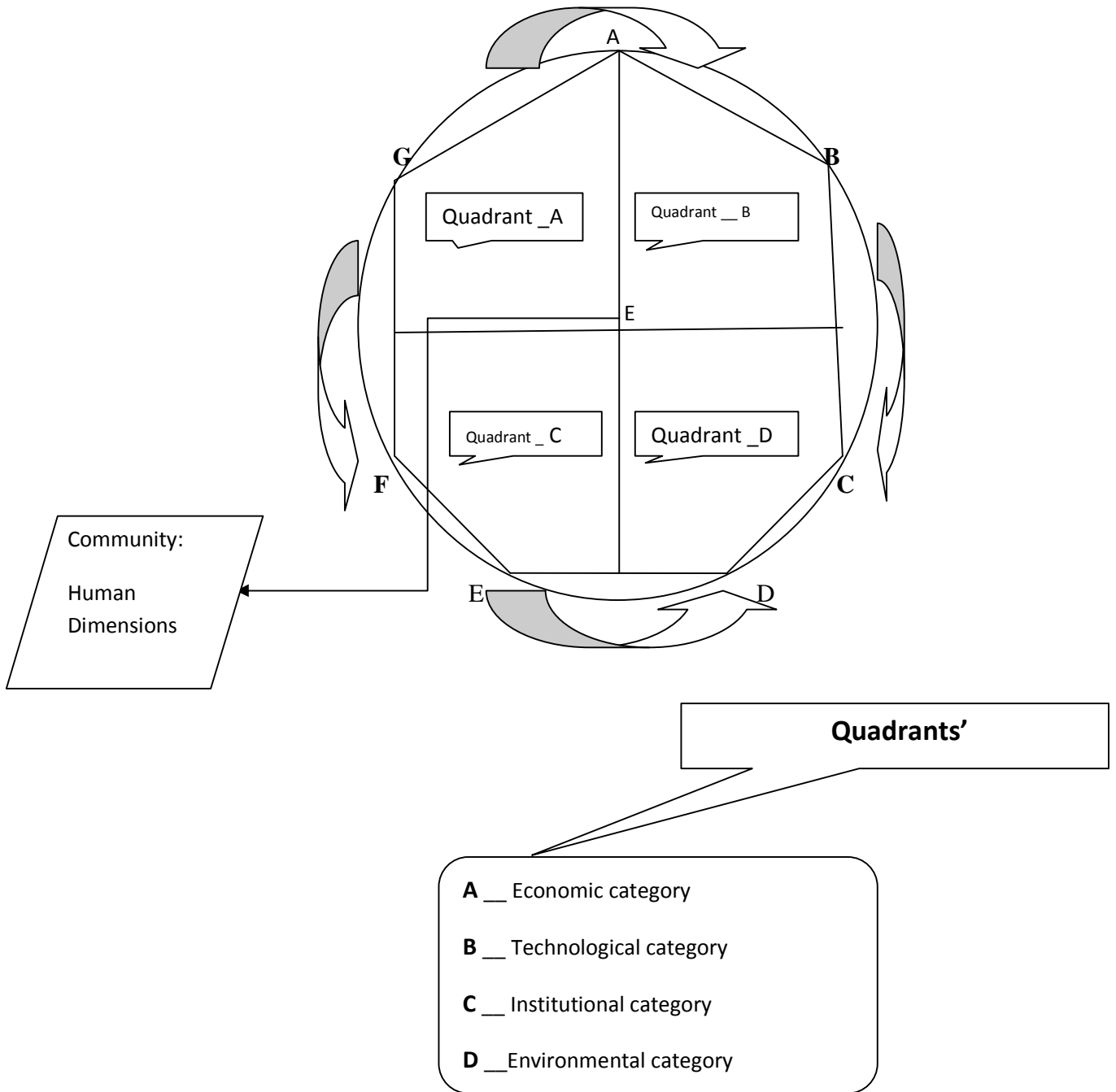
nature of the actors such as mining companies, farmers, bureaucrats (administrators), government,

judiciary, and non –governmental organizations involved in rural development and environmental concerns in mining communities.

The principle thesis advanced by labour market segmentation theory, challenges neo –classical economic theory and human capital theory on the grounds that workers and jobs are not matched smoothly by a universal market mechanism. Instead, it suggests that jobs and labour are divided into labour market segments. Economic geographers have contributed to the segmentation literature by focusing on home –to –work links, the spatial entrapment of workers and the place –contingent operation of labour markets. Linked to the economic exclusion of social groups are processes of cultural marginalization of residential places (England, 1993; Hanson and Pratt, 1995; Peck, 1989; 1996). A cultural perspective on segmentation allows for some autonomy or agency in the creation of labour market identity; an idea that remains underdeveloped. Applied to rural mining communities, contemporary segmentation theory provides micro-level insights \_\_ quadrants A: economic category/quadrant C \_\_ institutional category into how labour market (mine workers) identities are produced through experiences and representation of place \_\_ rural communities (Bauder, 2001). It helps illuminate ethnicity and class-based identities within rural mining communities; very important as mining draws migrant labour outside the geographical area under study. The principle thesis advanced by labour market segmentation theory, challenges neo – classical economic theory and human capital theory on the grounds that workers and jobs are not matched smoothly by a universal market mechanism. Instead, it suggests that jobs and labour are divided into labour market segments. Economic geographers have contributed to the segmentation literature by focusing on home –to –work links, the spatial entrapment of workers and the place –contingent operation of labour markets. Linked to the economic exclusion of social groups are processes of cultural marginalization of residential places (England, 1993; Hanson and Pratt, 1995; Peck, 1989; 1996). A cultural perspective on segmentation allows for some autonomy or agency in the creation of labour market identity; an idea that remains underdeveloped. Applied to rural mining communities, contemporary segmentation theory provides micro-level insights \_\_ quadrants A: economic category/quadrant C \_\_ institutional category into how labour market (mine workers) identities are produced through experiences and representation of place \_\_ rural communities (Bauder, 2001). It helps illuminate ethnicity and class-based identities within rural mining communities; very important as mining draws

migrant labour outside the geographical area under study.

**Figure 1:** Heptagonal Framework for Monitoring Sustainable Rural Mining Communities



The concept of livelihood defined as a means of living or of supporting life and meeting individual and community needs, provides new perspectives on developing healthy sustainable societies that provide people with secure and satisfying livelihood. Sustainable livelihood is concerned with peoples' capacity to generate and maintain their means of living, enhance their well – being, and that of future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, socio-cultural, economic, and political and are predicated on equity, ownership of resources and participatory decision –making (Sing and Titi, 1994). It also implies the nature of a sense of place and connection to the local community and help to retain capital within the local economy; \_\_\_ quadrant A: economic category, stimulate local investment in the community and utilize appropriate technology \_\_\_ quadrant B: technological category; that is ecologically fitting, socially just and human, and enhances rather than displaces community knowledge and skills (SDCN, 2002).

In spite of years of modernization, most rural communities in the developing world continue to exhibit tenets related to Toennies' (1965) conceptual framework of "Gemeinschaft – community or the natural grouping of people based on kinship and neighborhood, with shared culture and folkways which is pre – capitalist. New – institutional economics is more or less, an extension of the neo – liberal economic theory with adjustments of the basic assumptions pertaining to individual behavior. The concept focuses on institutional arrangements other than just the free market which forms the basis of the paradigm of neo –liberal economic theory. Thus, the concept of new – institutional economics is intended to aid investigation and analyses of economic phenomena \_\_\_ quadrant A: economic category; within the social context of a wider rural mining community. The framework not only analyzes economic institutions, but focuses on social and political institutions as well (Martinsussen, 1997).

Another theoretical framework that helps to widen and deepen the scope of framework to assist in the development of a sustainable framework for monitoring rural mining communities is that of

general systems theory. According to Laszlo (1972), the persistent theme of contemporary thought is the timeliness and the necessity of a return from analytic to synthetic philosophy. Bateson (1991) suggests that general systems theory emerged as part of effort to perceive and understand scientifically phenomena which eluded the mechanistic model of reality. Although, the mechanistic mode provided impressive scientific gains, it was limited to the dissection of life at given moment in time. When it came to overarching patterns of linkages and relationships as inherent in quadrants A, B, C and D, they were disregarded as immeasurable, if not irrelevant. On the other hand, general systems theory, perceives these patterns of relationships as part of a system. At its premise, is a holistic, process – oriented approach in the conceptualization of linkages, interrelationships of life: physical, biological, economic, political and socio – cultural. Investigating socio –cultural linkages of sectors in a rural mining community/economy, involves relations that are non –economic but important and significant to a comprehensive understanding of the process of sustainable growth and development.

The different theoretical and conceptual approaches analyzed have broad points of contact, but they do not reduce one to another, or they easily assimilated into a more general approach. Rather it is intended to provide the necessary clarification of a modified approach that enhances the processes of building sustainable rural mining communities. This measureable indicator framework have been developed as part of efforts at monitoring and decision –making process affecting rural socio-economic growth and development particularly, in sub – Sahara African countries.

## V. CONCLUSION

It's clear that a new approach offering an in-depth and a holistic assessment of the process of sustainable development is needed. This paper has examined the development of a core set of indicators for monitoring progress during the process of implementing neo-liberal economic reforms as a vehicle or strategy in the development of sustainable rural mining communities Less Development

Countries particularly, in sub-Saharan Africa. Recent development initiatives in sub-Saharan Africa, for example have been based on laissez-faire economic theory and not on ideas of central planning which have predominated until recently. This change in approach to development is bound to produce both positive and negative effects on process and outcome. As a result, and for the purpose of this paper, attempt has been made at developing an assessment framework with particular reference to rural mining communities, which proposed a set of indicators for the purpose of assessing this new approach to sustainable development.

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