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Principles for developing an effective framework to control minerals and rocks extraction impacts, mitigate waste and optimise sustainable quarries management



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ABSTRACT

An investigation into how and why frameworks are developed led to the understanding of the facts that most frameworks or guides are developed for specific reasons. However, this study reveals that for a framework to be 'effective', certain factors ought to be 'integrated' in order to specifically address the aim and objectives of the particular framework – especially in specific sectors such as the extractive resources sector. A study of fifteen influential frameworks provided insight as to some outstanding factors that must be at least considered in developing 'an effective framework' for a developing resources extraction sector.

Although the knowledge of a granite quarry environment in a developing country has been used in expounding the study, the study is also a referral of ongoing research and can be applicable to the development of similar guides. So, because the principles discussed in this study were also applied in the development of this paper, the principles of this guide could also be applied by governing bodies, local governments, researchers and research institutes, non-governmental and private organisations in the extractive industry and beyond, for the development of 'effective' guides aimed at impacts control and waste management.

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1. Introduction

This paper is an account of applicable principles associated with the development of an effective framework. The study was carried out with the interest of investigating the necessary key components of an Effective Framework for Impacts Control and Management of Waste from Granite Quarrying and its Utilisation in Nigeria. However, the study developed to include;

- How and why a framework could be developed for it to be effective.
- Heat should be considered in developing a framework for it to be effective.

- How this can be applied to a particular scope of activity in a given sector where the activity could generate (or is known to generate) measurable or descriptive waste or impact on the environment and/or its inhabitant.

2. Developing an effective framework

The drive for developing a framework could be said to be inspired from the zeal to educate, control and manage, or influence standards and regulatory policies. For the reason that, framework development deals with integration (Azapagic, 2004), especially of important factors. However, the factors to be integrated are identified based on the aim and objectives of the particular framework and the adopted procedure of the research leading to the development of the framework (Eggenberger and Partidário,

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Table 1
Pointers necessary for an Effective Framework.

S/N	Article	Pointers	Author	Date
1.	Developing a framework for sustainable development indicators for the mining and minerals industry	<ul style="list-style-type: none"> • Sustainability • Integration • Clarity in identification 	Azapagic	2004
2.	Policy development framework	<ul style="list-style-type: none"> • Clarity • Plan making • Implementation 	Bonehill	2007
3.	Self-regulation of environmental and social performance in the Australian mining industry	<ul style="list-style-type: none"> • Identification and labelling • Highlighting variables • Decision Taking 	Brereton	2003
4.	Framework issue: Framework documentation	<ul style="list-style-type: none"> • Research and research discussion • Simple presentation, and highlighting the variables • Reusable 	Chen and Xu	2014
5.	<i>National Planning Policy Framework</i>	<ul style="list-style-type: none"> • Sustainability • Plan making • Decision taking 	Department for Communities and Local Government (UK)	2012
6.	Mining waste guidance (Northern Ireland Planning Portal)	<ul style="list-style-type: none"> • Plan making • Implementation • Sustainable decision taking 	Department of Environment (DOE) UK	2014
7.	Development of a framework to assist the integration of environmental, social and economic issues in spatial planning, <i>Impact Assessment and Project Appraisal</i>	<ul style="list-style-type: none"> • Research importance • Discussion of research • Implementation and reusability 	Eggenberger and Partidário	2000

2000; Azapagic, 2004). Although, for the framework to be effective, in all instances, the researcher or team of researchers must ensure that the framework is able to communicate its content to the parties that would be concerned or involved with the application of the tool. The framework (not minding the format in which the researcher intends to present the final work) ought to be documented, and the documentation needs to be comprehensive and precise (Chen and Xu, 2014), in order to be effective.

Documentation in this dimension, may be regarded as a formal chronicle or record of experiences, procedures, outcomes and knowledge, and also as a mechanism for communicating these experiences, procedures, outcomes and knowledge, to an interested party. The documentation of a framework, might enhance the ability for that framework to communicate its content to an interested party, however, it may not account for the effectiveness of the framework. So, how can the framework be made to meet the 'effective standard'? Anyway, it has been stated that, for a framework to be effective it ought to be diverse in its structure (Eggenberger and Partidário, 2000; Azapagic, 2004; Bonehill, 2007; Stilgoe et al., 2013; Chen and Xu, 2014); integrating the basic components that would be highlighted in the Section 3.

15 carefully selected disseminated articles were critically analysed and they revealed the following pointers, after 8 were eliminated (Table 1):

3. Key components of an effective framework

'Planning' to make 'decisions' that are 'implementable', easily 'reusable', but very 'sustainable', may be the hinging primary constituents of framework development (see; Fig. 1). As sustainability has been described as ensuring that better lives for

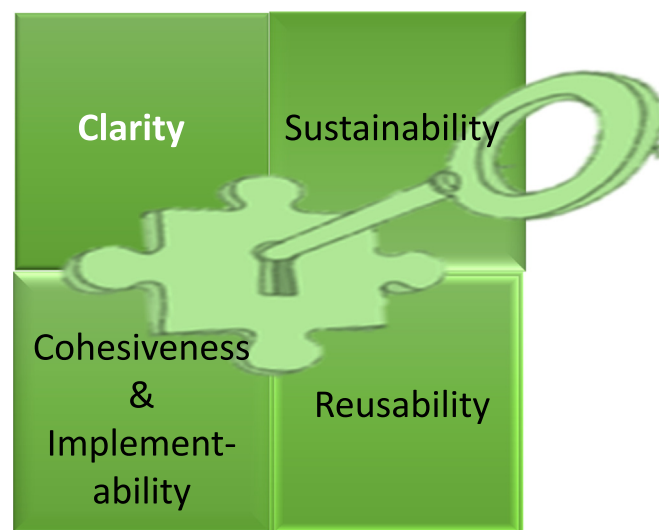


Fig. 1. Key Components for an Effective Framework.

ourselves does not mean worse lives for future generations (see Greg Clark; in DCLG (2012)), and the purpose of planning being to help achieve sustainable development (DCLG, 2012) - Planning therefore is key to the development of an effective framework in order to cover the components which are required to develop a framework, as well as the components that are expected to be concealed within the framework itself. The diagram below which the author has developed from the explanations and insights of various authors (Eggenberger and Partidário, 2000; Azapagic, 2004; Bonehill, 2007; DCLG, 2012; Stilgoe et al., 2013; Chen and

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