



# Planning for sustainable development: Strategic alignment in Peruvian regions and cities

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## ABSTRACT

This paper explores the application of the Strategic Alignment Model (SAM) to the formulation of strategies for sustainable development in regions and cities. SAM was created during the 90s in order to bridge the gap in terms of objectives, competences and culture between business and IT professionals. The present study applies SAM to align economic development and environmental sustainability and identifies concepts such as *industrial ecosystems*, *sustainable lifestyles*, *eco-business*, and *environmental services* as integrative strategies. Previous to this research, alignment has been studied in terms of public participation process, policy innovation and adoption of best practices. This paper proposes a new framework to represent alignment in a way that multiple strategies and pathways can be recognized, favoring dialogue and coordination. Likewise, a strategic analysis of Peruvian Environmental Action Plan 2010–2021 is presented.

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## 1. Introduction

Environmental decay is affecting economic and social development by imposing real limits to growth and deteriorating quality of life. Public officers and policymakers are heavily concerned on promoting economic activity that can create jobs and reduce poverty. Environmental issues are generally dependent on compliance with regulatory frameworks and impact assessments. Often, environment is seen as a source of costs (land use planning, baselines and information systems), constraints to economic activity (carrying capacity), or uncomfortable activism (NGO's and public complaints). The need of integration of development strategy and environment, so that environment is not left behind, appears very similar to the need for alignment between business and information technologies (IT) that has been widely researched during 90s and 2000s. For this case, Strategic Alignment Model (SAM) was created under the assumption that alignment between business and IT improves financial performance and marketplace competitiveness [1].

Strategic Alignment can be applied both in regional and urban planning to deal with questions such as how can a region/city select its benchmarks? How can we avoid environment being left behind in the planning process? How can we support regions/cities in their next steps of environmental improvement? How to develop alternatives to counter rapid urbanization? or What are the relationships between regional planning and city planning? The present study applies SAM to align economic development and environmental sustainability and identifies the concepts of *sustainable lifestyles*, *industrial ecosystems*, *eco-business*, *environmental services*, and *resilience* as integrative strategies. Furthermore, a new framework is developed to the formulation of generic pathways for sustainable development in both regions and cities. The framework is applied for an ex-post strategic analysis of Peruvian Environmental Action Plan 2010–2021 published by Ministry of Environment in October 2010.

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## 2. Current situation of planning for sustainable development

“It is clear that even though information technology (IT) has evolved from its traditional orientation of administrative support toward a more strategic role within an organization, there is still a glaring lack of fundamental frameworks within which to understand the potential of IT for tomorrow’s organizations.” Henderson and Venkatraman [1].

After changing the words *information technology* by *environmental sustainability* in the above statement, the main purpose of this study is exposed. Accordingly, this section examines a general framework for strategic planning and explores what are the roles of both future studies and strategic alignment within this framework.

### 2.1. General framework for strategic planning

The study utilizes Edwin Jaynes’ general decision theory [2] as a framework for strategic planning. According to this theory, inference on future states of Nature and decision making itself are problems of two different characteristics: while inference on the future is rooted in a well established framework of *prior* and *posterior probabilities*; decision making is made on basis of more subjective *loss functions*. In order to solve the problem of inference, Jaynes applies Bayes’ theorem and proposes the following steps:

- (1) Enumerate the possible states of nature  $\theta_j$ , discrete or continuous, as the case may be.
- (2) Assign prior probabilities  $p(\theta_j/I)$ , which represent whatever prior information  $I$  you have about them.
- (3) Assign sampling probabilities  $p(E_i/\theta_j)$ , which represent your prior knowledge about the occurrence of possible events or new evidence  $E_i$ .
- (4) Digest any additional evidence  $E = E_1 E_2 \dots$  thus obtaining the posterior probabilities  $p(\theta_j/EI)$ . On the other hand, to solve the problem of decision making, three additional steps are added:
- (5) Enumerate the possible decisions  $D_i$ .
- (6) Assign the loss function  $L(D_i, \theta_j)$  that tells what you want to accomplish.
- (7) Make that decision  $D_i$  which minimizes the expected losses over the posterior probabilities for  $\theta_j$ .

Other authors using this two-category formulation are Lindgren and Bandhold [3] who propose the problems of *scenario thinking* and *strategic thinking*; Godet and Roubelat [4] explaining that while *scenarios* depend on the type of vision adopted (exploratory, normative or retro-projective) and on probability, *strategies* depend on attitudes adopted in the face of possible futures; and, Porter [5] in the field of industrial and business analysis, who also proposes a two-step framework based on *competitive analysis* (industry scenarios) and *strategy formulation*. In practice, however, these two fields are not in isolation: the state of Nature tomorrow might be influenced by our present decisions (as when one decides to get an education) [2]; and, on the other hand, there are normative or desirable future scenarios that heavily shape our decisions today [4].

As far as this research is concerned, there are not serious future scenarios envisioning environmental sustainability under the current patterns of production and consumption. Almost every study urges about the need of changes in our models of industrialization, urbanization and consumption, and about the acceleration of technological improvements [6–8]. For these reasons, and, in the light of reports such as Intergovernmental Panel on Climate Change’s (IPCC) *Fourth Assessment Report* [9], and other future studies including Shell’s *Energy Scenarios to 2050* [10], it can be said that the developmental value of natural endowments and environmental capitals will increase in the future.

Furthermore, sustainability has not only economic or ecological dimensions, but social and political stability is also at stake. *World Resources Report 2005* by United Nations Development Program (UNDP) [11] recognizes that the poor often born the costs of resource exploitation being the most vulnerable to environmental changes. Nevertheless, the report concludes that natural resource wealth, when managed wisely, can also make the poor participate better in the economic growth. It is worth mentioning here that, in countries like Peru, environmental issues related to resources exploitation are the main cause of social conflicts and political turmoil [12].

Having a picture of the future of the environment based on above mentioned sources of information, it will be argued in the following paragraphs that a framework based on Strategic Alignment can make a major contribution in the step (5) of the general decision theory, which means, can improve the identification of possible decisions in the light of future scenarios, as well as, internal resources and constraints of a unit of analysis.

### 2.2. Current approaches to formulation of sustainable strategies

This study finds that current approaches to formulate strategies for sustainable development can be grouped according two main criteria: *scope* and *problem solving method*. *Scope* refers to the orientation to a single sector or to multiple sectors; and *problem solving method* accounts for the emphasis on application of problem solving process or adoption of well-known successful strategies and good practices (See Table 1).

Nonetheless, the author also considers that there is still a need for more dynamic approaches, able to identify critical components and capabilities and recognize their role in supporting and shaping strategic decisions.

Consequently, the targeted framework will have to present three fundamental properties: One, it will have to make explicit how economic development assumptions are aligned with environmental sustainability, both in the arena of

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