

## A SCIENCE, TECHNOLOGY & INNOVATION PROPOSAL FOR THE STATE OF BAHIA: A TRANSVERSAL APPROACH.

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### Abstract

This case study has the following objectives: to provide theoretical fundamentals and describe the proposed conceptual model for the formulation of the ST&I policy for the state of Bahia-Brazil, and to describe the methodological procedures adopted and the partial results of its application. Four concepts support this conceptual model: Sustainable Development, Local Productive Arrangements (LPA's), Local Systems of Innovation (LSI's) and Networks. These concepts orientate one's view in the innovative process as a result of interactive actions between social actors, besides underlying its evolutionary path. In spite of the advances, four principal challenges remain: the definition of impact indicators; the effective incorporation of the "priority principle"; the continuation of specific research and setting up of data bases on priority APL's; and improving the governance structure to deal with different stakeholders.

**Keywords:** Local productive arrangements, systems of innovation, Bahia-Brazil, networks, sustainable development.

### 1. Introduction.

Public policy studies show that the success or lack of a policy has to do not only with its multidetermined nature, but also that the conditioning factors of that success, or lack of it, can occur during its different phases: formulation, implementation and evaluation. Analysis of the formulation phase has emphasised: 1) the tasks of the different interested groups; ii) the need for integration of the different levels of government; iii) the importance of an articulated and coordinated process; iv) the search for convergence of policy instruments; v) the renovation of policy instruments; vi) the specifics of defined instruments due to the singularities and local socio, cultural and productive dynamics and vii) the importance of selective targeting policies (Loiola, 1998; Beloni, Magalhães & Souza, 2001).

During the implementation phase, the policy is transformed into action. Studies related to this phase have emphasised: I) the importance of the level of knowledge and capacity of the organizations and of those implementing about the policies that are being implemented; ii) the different processes that make up what is being implemented, including conflict points; iii) the actors' functions and of those in charge of implementing; iv) the bureaucratic discretionary level during policy implementation (Beloni, Magalhães & Souza, 2001; Souza 2002).

The evaluation should not be mixed up with monitoring tasks because the former incorporates elements of judgement. The evaluation is a complex task, which has to produce evidence of what works, for whom and in what circumstances. It requires the establishing of judgement criterions that vary from one policy to another. Evaluation can be about processes, results and impacts. It says as much about the effects of the policy on its public as it tries to

establish a causality relation between the policies and the social and economic condition changes (Souza 2002). Though having passed the test of various planning public policies methodologies, the separation in phases of formulation, implementation and evaluation is a mere didactic resource and new methodologies show the simultaneity and interdependence existing in these three phases.

Besides, public policy experts (Lynn, 1980; Peters, 1986; Dye, 1984) that emphasise rational and procedural decisional aspects and simply focalise the role of Government when the topic is public policy are being criticized. These authors neglected the essence of whatever public policy: the clash that surrounds ideas and different objectives, disguising the conflict and the limits that surround Government actions and decisions. One can say that in complex societies, the state has “relative autonomy”, showing that it has its own very space in which to function, although it is affected by internal and external influences. That relative autonomy links itself to the accumulation of certain capacities, which in turn, create situations for the formulation, implementation and evaluation of public policies. The relative autonomy and degree of development capacity, aforementioned, depend, logically, on a variety of factors and on the different historic moments of each country. This means that both elements are path dependence, or depend on the increasing returns in the full sense of the term economic; reflect past influences; history states in order to explain discretionary patterns because a country that follows a path will experience high costs to revert the situation (North, 1981,1994; Williamson, 1993). The institutions, which are formal and informal rules, that mould the actors’ behaviour, make certain policies ways easier than others. In other words, the power struggle and the struggle for resources are at the centre of public policy. Its outcome means the opting for certain directions and groups to the detriment of others (Souza, 2002).

Changes in the empirical plan of the economies, societies, technologies, organizations and institutions associated with the advancements of understanding these changes and their new forms have impacts over thinking and the working out of ST&I policies. Analysis of the principle experiences under way in developed countries led to the identification of new focuses of innovation policies and the key elements of these tendencies: policies centred in interactions; bottom to top focus; stimulating the learner; promotion of the diffusion of network structures; focus on the regional/local competences and needs; potencialize the interchange with other competent areas; technological restructuring; policy monitoring and evaluation; decentralized policy management; emphasis on the spread of better practices, adjusting to specific areas; stimulating the diversification of

company technological competences; search for new tools and methodologies in order to clearly define priorities (strategic planning), and management of the efforts of technological transference. (Cassiolato & Szapiro, 2000; Gusmão, 2002; Marques, 2003).

In synthesis, the State begins to take on the task of promoter, regulator and articulator of innovation policies, whose central focus is the potential of information, culture and knowledge flows. That governmental action is necessary and should take into account the fact that the companies’ conduct in relation to innovation suffers strong conditioning of the present competition model prevalent in industry or in the production chains in which every company inserts itself.

This case study is the result of a work, which aimed to support the definition of the ST&I policy of the State of Bahia, in Brazil. Its objectives are: to provide theoretical fundamentals and describe the proposed conceptual model for making the policy, and to describe the methodological procedures adopted for formulating that policy and partial results obtained. Trying to be true to its objectives and to a multidetermined and path dependence approach on public policies, it begins with this introduction in which are outlined objectives and their justifications. In item 2, the principle challenges of a developing economy in a globalized context and paradigmatic changes are contextualised. In item 3, the specific conceptual bases for supporting the setting up of a ST&I policy are presented. In item 4, the conceptual model adopted is described as well as its main components, while in item 5 we have the summary of the results of the model applied, or in other words, the most relevant aspects of the political policy presented by The Council of Science and Technology (CONCITEC). In the item dealing with final considerations, the principal underlying theoretical propositions of the analysis model are evaluated as well as the challenges that have yet to be overcome in order to improve the policy proposal.

## **2. The Macro Referential Condition: The Scientific and Technological Development Challenges.**

The world is undergoing profound changes, with the emergence of a new pattern of accumulation, where there is a growth in the intensity and complexity of developed knowledge, and the incorporation of knowledge to goods and services produced and commercialised has accelerated. In this new accumulation pattern, Information and Communication Technology (ICT) take on a central role in development dynamism. Even though there are different rhythms and varied intensity between sectors and regions,

the spread of these technologies reinforced, and, simultaneously, was reinforced by the globalisation process (Chesnais, 1994, 2001; Brunhoff, 1996).

Porter (1996) showed that successful companies continue to spring up from a restricted group of countries and that, added to this, even though their activities include multiple growth areas and different products, the activities of a certain sector are less dispersed. These companies tend to concentrate their most sophisticated activities in one country, generally the mother country and where leader companies are concentrated, in regions of a certain country (Porter, 1996). Lastres et al (1999, p.46-47-48) corroborated and widened the evidence found by Porter (1996). They have shown the tendency for difference growth, and growing distances between companies, regions and countries, both in terms of innovation capacity and in terms of economic development.

The vision of uprooted ness of globalized companies and of the generation and spread of technical progress is also unsustainable, facing the growing knowledge of path-dependence of local systems of innovation, of innovation and learning processes, and of competitive phenomenon, and consequently, development. This nature of things puts a certain weight on the importance of history and of institutions, in so far as components of the set of explanatory categories of the different trajectories of development presented by countries, regions and local areas.

The patterns of sectorial competition are produced and reproduced by the confronting process among companies, consumers, governments and so on. These agents are asymmetric in terms of power and information. In this way, the dynamic of capital accumulation is conditioned, in short, by local and international institutional elements, which are, in turn, modelled down through history (Bustelo, 1999). The accumulation of capital is not an auto-regulated phenomenon; it doesn't respond to exclusively an internal reproduction model; it happens within an institutional boundary.

Lastres et al (1999) lead us to believe that the emergence of the knowledge era and of the standard of strong financial accumulation shape "critical junctures", once they refer to the necessity for new strategies, new organizational models and institutional instruments, new normative and regulatory systems, that are capable of taking care of the issues that spring up at the present moment.

Beyond the centralization of knowledge, information, innovation and learning for the development, other dimensions, in a game of reciprocal influence, influence

capitalistic dynamic when the focus is sustainability. Sustainable development projects cannot neglect the contingency factors of the institutional surroundings and the sources of social conflict as was historically done in Brazil. In this context, data and development problems re-define and re-sketch themselves to the periphery countries the need to search for new ways of sustainable development. Models of a universal nature seem to be losing importance to the rich "socio-diversities" models and these models are becoming a reference point for the proposition of development projects rooted in experiences and concrete potentialities, independent of their territorial dimensions (Arocena & Sutz, 2004).

### **3. Specific Referential State for the Construction of a Scientific, Technological and Innovative Policy Proposal.**

In the following sub items, key concepts, governing structures and new ST&I policy tendencies in the developed world are discussed, which support the definition of the model for the proposition of a ST&I policy for the State of Bahia.

#### **3.1 Basic concepts involved in the policy proposal for Bahia.**

Rogers (1995) sees innovation as an idea, practice or object that is seen as something new by an individual or by another adoption unit. With this (re) concept of innovation, the peripheral countries – the majority of which, don't generate radical innovations nor are they the first to adopt them, although they undertake innovation incremental processes in order to adapt them to specific functioning conditions – they can be seen as generators and not just as innovation absorbers.

Innovation can be the development of a new organization, product, process or new service introduced to the market. Innovation is like that, a process, which involves a new development, its introduction into the market and its final distribution and use (Lundval, 2002). The pioneer innovator makes a profit above the normal during a determined period of time. But there are innovations that present a low rate of appropriability and due to this fact they are not attractive to the private entrepreneur, although these innovations can incorporate a great potential for structural transformation, for conduct changes and for transforming ways of local organizations, which, in turn, in the long term, tend to make viable competitive productive venture operations.

On the other hand, technological learning needs conscious, deliberate and systematic efforts in order to collect new informations, try new things and create new abilities and operational routines, like the establishing of new relationships with external actors (Lall, 2000). It depends, however, on the innovative capacity derived from the confluence of social factors, institutional and cultural specifics to the ambient in which economic agents are inserted, socially, culturally and politically, along with the competitive sector patterns in which the companies are inserted. This means that innovation is also a social and collective process (Callon, 1992).

Resulting from learning, technical capabilities depend on the variety, on the degree of interaction and on the intensity of the use of internal and external learning sources of knowledge. It also depends on the variety, the intensity of use and the interaction between the different socialization mechanisms, and on the standardizing of what was learned by the individuals in the organizations.

### **3.2 Governing structures of policy proposals: LPA, LSI and networks.**

Innovation processes, which are set at company level, are generally speaking, generated and sustained by relations with other companies and organizations, because innovation is a systemic and interactive phenomenon. Within this understanding of things, the company is redefined as an organization geared to learn and inserted in a wider institutional context, participating in different governing structures.

In spite of the lack of clarity concerning the concept of network structures, two basic characteristics are important in order to delimit this concept: the interaction between the actors and/or formal/informal organizations, and the regularity of these interactions between them. Those interactions, in turn, can be more or less formalized, or even informal, based on interests, projects and common actions. In this way, the basis of a network is its social architecture that incorporates mechanisms through which the interactions and information are articulated (Charan, 2000). Taking as a reference networks, the possibility is opened to see the agents/actors in their interactions and plans and due to this, in a processual dynamic, overcoming the atomist approach limitations and also the very organizational systems; the dichotomy between the internal and external company surroundings is minimized; the artificial division between actor and structure is broken, as well as between company and surroundings; it contributes toward the apprehension of multiple social relations and for the simultaneous analysis of diverse social levels – individual, group, organizational and institutional; it favours the

analysis and apprehension of the objective relations between collective actors and individuals in a determined locality or place (Loiola& Moura, 1996).

Local productive arrangements (LPA's) are defined as territorial agglomerations of economic, political and social agents – focused on a specific grouping of economic activities – that present ties even being incipient. LPA's involve the participation and the interaction of companies – from producers of final goods and services to suppliers of input and equipment, service and consultancy rendering groups, commercial people, clients, among others – and their various forms of representation and association. Other different public and private organizations are involved too. These organizations can be enrolled in: formation and capacitating in the area of human resources like technical colleges and universities; surveys, engineering and development; promotion and financing policies.

It's important to note the historical nature and, therefore, the dynamic of that concept. Wherever there is a production of whatever goods or services tend to exist a LPA, involving actors and activities related to the acquisition of raw materials, machinery and the other inputs. LPA's concept represents a practical unit of analysis and investigation that surpasses the limits of the analysis that emphasizes the individual and sector organization, allowing an integration among the different dimensions of the territory: physic, economic, symbolic-cultural and politic-organizational (Albagli, 2004). LPA symbolizes and embraces all of the real space where learning occurs, where innovative and productive capabilities are created and through where tactical knowledge flows (Lastres; Cassiolato, 2003).

The National Systems of Innovation (NSI's), the Regional Systems of Innovation (RSI's) and Local Systems of Innovation (LSI's) are a set of concepts that make a big contribution in the building of ST&I policies. They encompass settlements and agents responsible for the endogenization of the technological progress in a country/area/region. They are made up of productive organizations, that propagate, sell and finance the ST&I's and other companies or social organizations, to which they are more closely linked in order to attend to the demand for goods and services (Rocha, 1999). As highlighted by Nelson and Rosenberg (1993), the interlacing and non linearity relation between the scientific and technological dimensions are principle characteristics of the present innovation system and they manifest a complex relation in which science acts as leader as much as following the technological development – science and technology take on a transversal dimension, the axes that passes by and

becomes part of the actions and policies that try to encompass the challenge of developmental promotion.

Lundval (2002) proposes to work the concept of the innovation system in two dimensions: one that refers to the structural system – what is produced and what are the competences developed; the other, an institutional dimension: how does production, innovation and learning come about. The author emphasises the importance of the relationship of confidence and loyalty. This means that the market is incapable, or has been, of transmitting qualitative information between users and producers.

Holding this view, the notion of territory takes on an ever more important meaning in order to understand and act based on LPA's and LSI's. All territory is a subjective construction, this is, it results from somebody else's action, who can be endogenous or exogenous to the territory (SEBRAE, 2003). In this way, it can be observed that the concept of territory is not to be reduced to a material or concrete dimension; territory is an arena of forces, it's a web or a network of social relations that is projected in a determined space or area. It is constructed historically by means of political, socio-economic and cultural relations; it links up to different contexts and scales: home, work place, neighbourhood, city, region, nation and planet. In the globalized world, where competitive advantages are more and more associated with innovation and knowledge, the most important resources in defining territory are economic and symbolic-cultural: culture, social capital, intellectual capital, technology and innovation. These economic and symbolic-cultural resources take place of natural resources (Cassiolato & Szapiro, 2003).

In this sense, LPA's, LSI's and networks are also territories where the constitutive dimensions are economic, innovative and cultural; where the interests are centred on common goals. They are also social representations, influencing the organizational manner and the dynamic of economic activities, social, cultural, environmental and political and, at the same time, being influenced by them. They ought to be understood as *locus* of social action and part of a spatial

totality. The actors involved (businesspeople, support groups, universities, neighbourhood associations and so on) are inserted, produce and recognize themselves in these territories (SEBRAE, 2003).

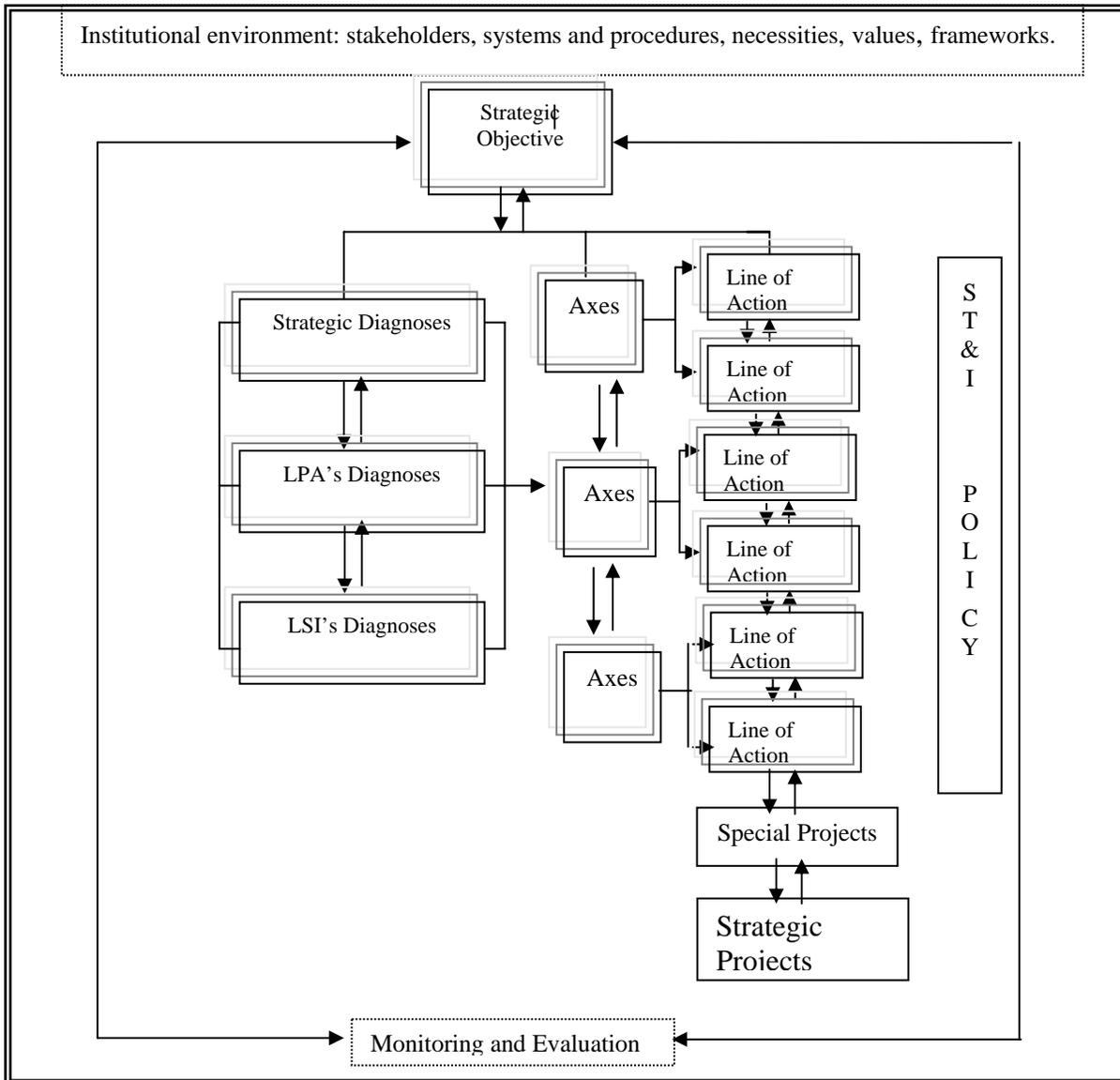
## **4 The Conceptual Model and the Methodological Process of the Formulation of the Policy Proposal of ST&I in Bahia.**

### **4.1 The proposed conceptual model**

Taking as a reference three units of analysis (diagnostic) and, simultaneously, as a proposition (policy) – LPA's, LSI's and Networks, the proposed model comprehends various dimensions that will be described in what follows. The institutional environment is made up of actors (the players) and of game rules (the laws, regulations, collective conventions – formal and informal, individual values, organizational and production models and so on). It embraces the totality of institutions and types of agents directly involved not just in the carrying out of the transaction but also in the guaranteeing of its execution and structures of governance. The strategic socio-economic and environmental diagnosis, of priority LPA's and LSI's are fundamental so that one can propose projects and actions seeking to contribute for the putting into effect of the future vision of The State of Bahia Strategic Plan (2003). These diagnoses present the principal group of situations-problems, their possible causes and effects.

The components of ST&I policy are: strategic objective; thematic axes; lines of action; and specific projects (Figure 1). Strategic objective expresses the most general impact of Policy change; it goes beyond those who are the direct beneficiaries -- individuals, groups or organizations. They are complex and multi-conditioned objectives. Their indicators generally, are, indirect, which show aims and intentions that are not carried out exclusively by means of ST&I policy. Impact indicators give evidence about policy contribution in order to reach, in the long term, the strategic objective (Armani, 2002).

**Figure 1: Conceptual Model of ST&I**



Source: authors

Thematic axes are area groups, themes and integrated knowledge, fundamentals for the construction of an environment suited to innovation. Taking into account the interactive dynamic of the innovation process, those axes try to incorporate their physical or tangible dimensions, as well as their intangible dimensions, in order to build the capacity to learn, select, produce, make, think, spread and manage the innovation. To each thematic axes can be

linked lines of action, programmes and projects, depending on the complexity of the objects focused. Lines of action, programmes and projects put into practice ST&I Bahia policy in order to promote individual capacity to develop knowledge, skills and attitudes, seeking the transformation of individual competences in organizational competence and social and intellectual capital (Figure 1).

Monitoring and evaluating correspond to a set of procedures of accompaniment and analysis, carried out during and after the policy implementation, with the view of verifying if the activities and results show themselves to be in conformity with what was foreseen, identify the causes for the diversions, adjust activities and results, and see to it that the expected results are being reached or attained (Armani, 2002). Monitoring says about the systematic observation of the policy development and implementation and its thematic axes with its respective projects and actions. The evaluation fulfils its role of critically analysing how the policy is going, according to its objectives, likewise its projects and actions, having as its base the collected monitored information. In this way monitoring and evaluation are two dimensions of policy and its respective programmes and projects accompaniment (Figure1).

## **4.2 Methodological process of policy making**

The policy formulation, implementation and evaluation processes create opportunities in order to transform institutions and organizations, increasing the influence of the latter and supplying a guide for a concerted action between the different actors involved. But the stakeholders' involvement is necessary. In order to deal with its unfinished dimension, more than a plan or norm, the policies tend to represent a political contract among its stakeholders.

But according to Loiola & Queiroz (2002), a change in the rules of the game (institutions) in the ST&I area in the Northeast Brazilian Region and in The State of Bahia doesn't happen overnight. In order to assure ST&I policy effectiveness, the stakeholders should have to incorporate the principle of participation as an important rule of their very actions. Participation doesn't seem to be a very commonly practiced value, be it in government circles and their bureaucracies, or in the academic and survey centres, or in the productive milieu in Bahia.

So, the decision taken, was, the gradual broadening of the role of those involved. During the first phase, the carrying out of the proposed project implied, a macro plan, a revision of all the literature dealing with the principle concepts selected, actualised approaches about innovation, learning and how it is related with development, and about the principle tendencies of innovation policies adopted by developed and Asian countries. From this revision emerged the conceptual model in order to guide the construction of the ST&I proposal for the State. Later, interviews and round table discussions were carried out in order to collect data, information and content about economic, social and cultural activities in the State of Bahia, and also about the

SLI, above all focusing on its principle teaching, surveys, extension and fostering of innovation organizations.

The firms which are the main agents of the SLI and LPA weren't the focus during this phase of the work. Their interests were gathered indirectly, by the access of work done by consultants, under the auspices of the very same State Government, The Association of Producers or Workers' Unions. The preliminary version of the proposal also included information about projects and activities already under way in SECTI, which were gathered through interviews done with project coordinators or through pre-existing documents. These activities and projects were defined during the elaboration of SECTI's Pluriannual Plan of Action (PPA), and were appraised in a public audience at which about eighty stakeholders were present. After some rounds of talk with the policy coordination nucleus, the initial version was sent to SECTI.

The second phase of the project proposal had as its principle protagonist the coordination nucleus of SECTI policy. This nucleus elaborated a second version of the policy proposal, which in turn was sent to a wide group of people, previously chosen by the very nucleus, made up of representatives of other Government areas, representatives from the academic area, survey centres and from industrial managerial organizations. Consultants also had access to this new version. After the meeting of all the contributions, those judged to be pertinent were incorporated into the third version of the proposal, which was sent to The Council of Science and Technology (CONCITEC) for their appreciation. The ST&I policy was approved at the end of 2003.

## **5. Summarizing Contents in each Dimension of Proposed Model.**

### **5.1 Strategic Diagnostics.**

The profound transformations which the State of Bahia has been going through on an economic level has not yet been reflected on the social level, as can be seen by datas: Bahia has the 8<sup>nd</sup> GIP (Gross Internal Product) but it occupies 22<sup>nd</sup> place among the 27 States of Brazil, according to the Human Development Index (IDH) Ranking; it's the fourth with the highest income appropriated by the richest 10% of the population; it's the sixth Brazilian State with the highest poverty rate (IPEA and PNUD, Brazilian Human Development Atlas, 2003).

On the economic level, the challenges are not just to speed up diversification, integration, decentralize and densify the productive structure, but also increase participation and stimulate the local business to be more innovative. In the

social area, it's urgent that the population on the margins of the development process be incorporated into this new model. On a cultural level, it is necessary to value and to recognize as a social asset of each locality what is specific to them and also their vocations, making viable the interaction of networks through which local knowledge can be passed on making interaction take place. On an environmental level, recuperation and preservation actions must be emphasised in order to protect the State's rich biodiversity and its fragile ecosystems that are endangered. On an innovational level, the challenges are to heighten the capability to bring about local innovation, increasing the capillarity and the integration in networks of their actors and these networks with other national and international ones, focusing the LPA's, strengthening and supporting the modernization of technology and the development of companies' intellectual capital, universities and survey centres, spreading the innovation and entrepreneurial culture, and reinforcing local social capital.

Beyond presenting itself incomplete and immature, the Brazilian innovation system is concentrated in the South-centre of the country, notably in the Southwest (Albuquerque et al, 2002; Coutinho, 2002). Recent works which diagnosed the North-eastern innovation system point to the lack of priority in relation to ST&I questions, which explains, in part, "offerism", "bindism", "autonomis", and isolationism, that characterizes practices in this area (Rocha, 1999; Dagnino, Monteiro & Gomes, 1998; Dagnino, 2003). The State of Bahia is no exception to this rule (Bahia, 2002; Loiola & Queiroz, 2002).

In 2002, there were 15.158 survey/research groups and 83.850 researchers in Brazil. Of these totals, São Paulo had around 27%, whereas Bahia counted for 3% and 3,4% respectively. Pernambuco, whose GNP is inferior to that of Bahia, had 3,8% of the total survey groups and 4,1% of the total researchers. In relation to the total CNPq investments in scholarship and fostering of surveys, the concentration in the South-western region stands out, even though still the percentage destined for this region has decreased from 63,02% in 1997, to 57,36% in 2002. North-eastern data present a rise: in 1997, 11,98% of the total resources were destined to the region; in 2002, that percentage reached 13,33%. In 1997 Bahia absorbed 1,70% of the total resources, less than that of the States of Ceará, Paraíba and Pernambuco (CNPq/AEI. Promotion Management System. Retrieved from the Web on 16/09/2003:<http://www.cnpq.br/estatisticas/estados.htm>).

Simultaneously one can observe: obsolete equipment and installations and ill prepared institute and research centres technicians; outmoded teaching and university surveys; a collective lack between the multiple actors of their

innovation systems; the relative incapacity of these actors to reap benefits from the pre existing incentive systems, on a state or federal level; the low qualification of the work force; low innovation of companies and organizations; the lack of structure of strategic APL's; incentive policies, centred in the fiscal war logic (Bahia, 2002; Loiola & Queiroz, 2002).

Having as its objective increase the capillarity of the local innovation system in order to deal with the complex challenge of development with more equality, a Foundation of Research in Bahia - FAPESB was set up in 2001, and, in 2003, The Secretariat for the Innovation of Science and Technology (SECTI). SECTI, especially, has as its objective strengthen and, when necessary, create scientific bases, technologies and knowledge for sustainable development in Bahia. The growing institutionalisation of the ST&I area in Bahia articulates itself and reflects the diversification and modernization of the productive and export structure in the State, but also the verification of the gaps existing in the State's internal capacity to create, spread, absorb and teach science, technology and innovation practices. It's one of the trademarks of the "critical junctures" through which Bahia is going through at the present moment.

## **5.2 Strategic Objectives, thematic axes and objectives per axes**

As can be observed from Table 1, the strategic objective of the ST&I policy is linked to the sustainable development of the State of Bahia. Thus, the promotion of the innovative endogenized capacity in the State is focused upon. Four thematic axes were proposed: Strengthening of the Scientific and Technological Base, Technology for Productive and Firm Development, Technology for Environmental and Social Areas, Information and Communication Technology. Analysing the objectives per axes shows: the concentration of intentions or resolutions in articulating different interested bodies in integrating science and technology; strengthen the local innovation system and business competitiveness; the incorporation of an innovation concept comprising of a tangible face and the other intangible; potentialize the formation of networks, as structures of governance, and emphasise the formation of intellectual and social capital, both as lines of actions and projects; widening the focus of priority sectors for the development and absorption of innovations, including lines of action focused on environmental and social areas; and the relevance of the development of innovation and business capacity in Communication and Information Technology (CIT). It's clear that the political axes show strong synergism between them (Table.1)

Their lines of action, projects and instruments try to create conditions so as to make a break with the past and foment competitive bases in order to bring about sustainable development. They look to create a socio-economic environment and a regulatory system favouring competition and cooperation, through direct help for scientific-technological training of the private and public sectors, through the promotion and support of research and technological services, or still through the articulation of strategic networks or even through stimulating creativity,

scientific curiosity and entrepreneurship. Their lines of action and projects would have a place in specific prioritised territories within the State of Bahia. In this sense, they intend to make LPA's and LSI's more dynamic, strengthening social capital. Other than these axes and their lines of action, two special projects were formalized – Technological Park and Digital Identity, along with four strategic projects. The lines of action and the projects are, in fact, “policy in action” (Table 1).

**Table 1 – Strategic objective and thematic axes of ST&I policy**

<b>Strategic Objectives</b>	
Foment and strengthen the development of human and social capital and infrastructure, in order to teach, learn, generate, diffuse, adapt and generate innovation, as pre conditions for sustainable development in the State of Bahia.	
<b>Axes</b>	<b>General Objectives</b>
Strengthening of the Scientific and Technological Base.... Includes 11 lines of action and 16 indicators	Help and articulate the member agents of the Scientific and Technological Base of the State of Bahia, favouring the learning potential, widening the creativity and critical knowledge of those institutions, widening the competitiveness of research groups for fundraising, promoting its modernization and strengthening , so that to increment its participation and contribution to the local and regional development process.
Technology for Productive and Company Development. This axes is subdivided into four areas: Company Technological Capacitating (five lines of action); Basic Industrial Technology – BIT (seven lines of action); Technological Services for Competitiveness (four lines of action); Technology for the Strengthening and Diversification of the Energetic Matrix (three lines of action). Include 19 indicators	Help and articulate actions involving company and productive segments, especially micro, small and medium ones, for the development of company systemic competitive conditions, in other words, the refinement of local capacity to produce, manage, create and respond to new technological and market opportunities, fomenting accumulation, diffusion and creation of new products, processes and services.
Technology for Environmental and Social Areas. Include 11 actions and 11 indicators.	Strengthen the innovative development, as well as its absorption and diffusion, in the areas of education, health, housing, culture and the environment, contributing to the refinement of public administration in these areas, potentializing knowledge and interdisciplinary solutions for local problems and popularising interest in science.
Technology, Information and Communication (TIC). Includes 9 lines of action and 13 indicators	Develop the innovative and business capacity in the (TIC) sector, stimulating the formation of human resources and investments with dynamic effects in local capacity, with the principle focus being strategic sectors of the State economy, in the modernization of public services and the support of social inclusion programmes.

Source: Bahia. SECTI, 2004

## 6. Final Considerations.

According to the revision of the literature undertaken in this article, public policy involves various levels of government and stakeholders, not limiting itself to formal participants, seeing that the informal ones are also important; it's all embracing and isn't limited to laws nor rules; it's an intentional action, with objectives that have to be reached; it's long term, even though it generated short term results; unfolding in plans, programmes, projects, data bases or formation systems and research; and when put into action, it's implemented, and should be open for evaluation. Additionally, public policies are path dependent and evolutionary conditioned; they reflect past influences, but they can change, even though certain institutional boundaries make the reversal of previous choices difficult.

The methodology adopted for making Bahia ST&I policy took as a reference point a multidetermined public policy vision. Thus, it is expected, that the basic concepts discussed during its formulation process and here registered not only direct its formulation phase, but also its implantation and evaluation. It is considered, that the permanent activation of the most diverse instances of collective participation is condition *sin ne quo non* for the sustainability of the policy proposed. Created capacities, but also opportunities, allow the creative use of learning and continue learning.

This article introduced to the debate an analytic model which was proposed in order to subsidise the construction of the State of Bahia ST&I policy, considering its insertion form into the globalisation process and specifics of the socio-economic, scientific, technological and local innovative development. The proposed model made the policy making viable taking on a strategic perspective and potentialising its transversal nature, in the same way as its management.

Four concepts which are articulated in a dynamic and interactive fashion support the proposed conceptual model: sustainable development, local productive arrangements (LPA), networks, local systems of innovation (LSI). These concepts orientate one's view in the innovation process direction as a result of interactive actions among social actors, which is influenced by local specificities generated during the course of its development. Along with this, the focus in the learning process, and consequently, the capacity for innovation meant that formation, diffusion, and the increase of the capillarity of network structures potentialize the possibilities of interaction between agents, between different learning sources, increasing, also, interaction intensity, because these networks viabilize the compression of time and space.

The application of LPA concepts, LSI and network, additionally, widened the policy maker's attention beyond the sectorial aspects, allowing it to understand important productive activity coordination elements, its non-market components and its economic dynamic. The formulation of the aforementioned policy seems to have allowed the preliminary mapping of interests and conflicts of stakeholders and notice the cooperation and competitive spaces that can be explored and stimulated stemming from directed actions.

The formulated proposal also had as its base strategic diagnostic results and the State of Bahia Strategic Plan for the 2004/2007 administration period. It became clear that Bahia State's sustainable development presupposed the reduction of the existing excessive socio-economic disparities, which in turn, depended in part, on the overcoming of its relative backwardness in scientific, technological and innovative terms. It means the coming to grips with a twofold challenge: balance the books and come clean with the historic past and rebuild the sustainable development bases. The coming to terms with these, and these only, would demand a concerted action between the different social agents, placed in various levels and spheres of power and knowledge, in the long term.

Yet according to the revised bibliography undertaken, the ways that were adopted, those on a process level as well as those derived from the proposed conceptual model, tend to amplify the probability of a policy that will generate the desired impacts, as long as they direct the attention of the policy maker to local specifics ----- without considering them static, permanent and immune to transformation – and for contingencies and opportunities that arise from these specifics in view of the actual economic order.

Finally, its important to emphasise that in spite of the registered advances – which don't have to exclusively do with the initial consultant propositions, but that also reflect the commitment and maturation of the coordination nucleus of the process within the SECTI, like the contributions of many other consultants and of the scientific community of The State of Bahia, there is still a lot more to be done. One of the main challenges is to define impact indicators and their goals for the objective of policy strategy, as well as transform each axe's indicators or project in measuring instruments, quantifying or qualifying them and setting a time span. Another challenge is effectively incorporate, the "priority principle", in danger of the pulverization of the restricted resources and, consequently, the minimizing of the desired impacts. A new challenge is the prioritisation of APL's, the continuation of specific research and setting up of data bases, also the widening of stakeholders

participation in the implementation and evaluation of lines of action and projects.

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