

## **The Challenges of Zimbabwe Science and Technology Policy Formulation from 1980 to 2002.**

**Mediel Hove**

Permanent full-time Lecturer of War and Strategic Studies  
Department of History  
University of Zimbabwe  
Zimbabwe.

**Tawanda Zinyama**

Lecturer of Public Administration  
Department of Political and Administrative Studies  
University of Zimbabwe  
Zimbabwe.

### **Abstract**

*Zimbabwe's Science and Technology (S&T) policy was in conception for over two decades from 1981 to 2002. The paper examines the challenges of S&T policy formulation in Zimbabwe. It divulges the rationale why it took a long period before an S&T policy was originated. The paper reveals that S&T policy development was complex. It was largely the lack of; strong policy, multi-stakeholder involvement, funding and commitment from government ministries mandated with policy formulation and implementation. One of the major institutional problems preventing and interrupting the formulation of the S&T was the disintegration of the policy formulating route. The data were gathered by questionnaires and key-informants oral interviews. The respondents and key-informants were chosen by means of purposive and snowball sampling methods. It concludes that for S&T policy to be effectively devised and executed there should be institutional capability amplification and budgetary allocation for the science and technology cause.*

**Key Words:** science, technology, policy, stakeholders, intractability, Zimbabwe, formulation.

### **1.1 Introduction**

Zimbabwe's Science and Technology (S&T) policy was in gestation for over two decades since the attainment of independence in 1980 up to 2002. This was so despite the project being on the institutional agenda. The paper therefore traces and analyses the challenges of S&T policy formulation in Zimbabwe. The paper establishes the reasons why it took 22 years for Zimbabwe to formulate the S&T policy. It argues that, lack of strong policy community, it was very fluid, porous and it lacked vigorous efforts to execute defined plans. The S&T policy making process began to move when a central decision making point was created and placed in the Office of the President of the Republic of Zimbabwe. The data were collected by questionnaires and key-informants face to face interviews. The respondents and key-informants were selected through purposive and snowball sampling methods. The paper reveals that S&T policy development was complex. One of the major institutional problems blocking and delaying the formulation of the S&T was the fragmentation of the policy making process. There was no institutional coherence and synergism. The paper divulges that S&T policy formulation had progressed at a slow pace largely as a result of the constant shifting of responsibility for S&T policy formation from one ministry to the other. This resulted in serious discontinuities and abandonment of previous efforts by the new heads of ministries. Other factors that worked against S&T policy formation include; low funding, lack of mobilised capacity; flip flop attitude towards S&T development and lack of consultation, participative and inclusive approaches. To be an effective success the S&T policy formulation and implementation the institutions handling it must be capacitated or strengthened financially to accomplish the set objectives.

### **1.2 Colonial Period: Science and Technology**

The colonial period can be defined as having been a "time of low level technological transformation"(UNCTAD, 1980:97), with even a trend towards "technological regression"(ibid). The simple economy of pre-colonial Zimbabwe was characterised by cooperative and collective use of the means of production (land, agriculture and minerals).

Innovation and technology were geared to the immediate requirements of agriculture and industry when the techniques were evolved, utilised and disseminated while preserving integrity of the village community. There was imported technology and related developments which were initiated by the government and included the creation of the Rhodesia Iron and Steel Commission as a state agency, the establishment of the Cotton Industry and Research Board and the creation of the Industrial development Commission (IDC) with the purpose stimulating new ideas for management of the industrial economy.

Moreover, there was an “almost complete absence of technological development” (Scientific Liason Office, 1983:9). During the Unilateral declaration Independence (UDI) era, there was no explicit S&T policy document. The technological growth was not as a result of deliberate action but was in the nature of reaction to exogenously determined factors which imposed stress conditions on the economy while posing challenges to the entire government machinery. The result is what can be witnessed today: an economy which is “by African standard advanced industrially, but which at the same time is severely underdevelopment technologically” (Riddell, 1988:174).

### 1.3 Post Colonial Science and Technology

“It’s a great, huge game of chess that’s being played all over the world, if this is the world at all you know. Oh, what fun it is! How I wish I was one of them! I wouldn’t mind being a Pawn, if only I might join, though, of course, I should like to be a Queen best” (Alice, 2002, in Solomon and Lebeau, 2006:116).

Alice describes very well the global game of Science and Technology (S&T) being played at the moment, a game most developing countries find is happening through the looking glass. It is a race in which the Most Developed Countries (MDCs) are always running faster and therefore further, whereas the faster the Least Developed Countries (LDCs) try to run, the more they find they are at best standing still. This depicts the scenario in Zimbabwe. Since 1980, one of government’s principal policy objectives has been the development of scientific and technological capacity as the nerve centre for social and economic development. During the colonial era, the S&T research and application tended to concentrate on commercial agriculture with ‘less emphasis on other equally important areas of the country’s socio- economic life’ (Government of Zimbabwe (GoZ), 1981:13). This indicates that the majority black people’s needs were ignored and S&T policy was not designed to improve the living standards of the Africans. Mathema echoes the same sentiments when he asserts that “Research and Development must be based on actual and anticipated needs of the economy, it must help our people raise their standards of living” (1994:133).

The government was faced with the challenges of formulating the S&T for the country in an effort to ameliorate the well-being of the people. The issue of S&T appeared on the institutional agenda when the then Prime Minister R.G. Mugabe in 1981 at the Zimbabwe Conference on Reconstruction and Development (ZIMCORD), stated that, “the government will speed up the development of S&T ... to promote industrialization” (GoZ, 1981:130). The then Minister of Economic Planning and Development, the late Bernard Chidzero, formulated the “Growth with Equity Policy Statement” in 1981, incorporating Prime Minister’s public pronouncement at ZIMCORD (ibid). While S&T is generally one of the most important tools for achieving national progress, Zimbabwe and most developing countries (with the exception of Asian Tigers), do not have clear-cut policies and strategies on the generation, acquisition, development and deployment of S&T.

The aims of government policy for the development of S&T in Zimbabwe were set forth in the Growth with Equity policy statement of February 1981. In that policy statement, the government announced its intentions to come up with an explicit national S&T policy to guide efforts aimed at building the country’s technological capabilities. “Government proposes to review as a matter of urgency the provisions of the Research Act and promulgate a new Science and Technology Act with a view to establishing necessary and appropriate institutions in this field” (GoZ, 1981:14). This point was reiterated in the Transitional Development Plan 1982-1985, The First (1986-1990) and Second (1991-1995) Five Year Development Plans. In fact, the Second Five Year Development Plan (SFYNDP) lamented the lack of progress in the formulation of a national S&T policy. In the SFYNDP, in the foreword, the President of Zimbabwe, Robert Mugabe lamented the pace at which the S&T policy was developing:

Our country has abundant natural resources and yet the rate at which we have been developing S&T and exploiting our natural resources has been slow that we have continued to depend unnecessarily on imported goods and services in areas where we should have already ceased to do so (SFYNDP, 1991:14).

Despite this degree of chagrin and disappointment, (SFYNDP) was sidelined in favour of the Economic Structural Adjustment Programme (ESAP) that ran from 1991 to 1995. From 2000 to 2002; the issue of S&T took on impressive momentum and graduated to the terrain of a Presidential preserve along with sectors such as defense and agriculture. The S&T was finally launched on the 5<sup>th</sup> June 2002. Though the S&T policy was eventually formulated, the key question is: why did it take so long for Zimbabwe to formulate the policy? Who is liable? This paper explores these and other questions by employing multiple methods of inquiry. The paper argues that the impediments in the formation of the S&T policy have largely been due to the institutional constraints. The institutional arrangements and fragmentation implied diffusion of responsibility and this made coordination of S&T policy formulation difficult. Therefore, policies do not operate in an institutional vacuum and it is natural that the success or otherwise of a particular policy depends on the institutions that enable or constrain it.

#### **1.4 Methodology**

Documentary evidence was examined and this included; the public pronouncements, national development plans, government reports, press cuttings and relevant S & T literature. In addition to the desk research, the study conducted key-informant interviews and administered questionnaires to various stakeholders. Twenty-one (21) key-informants were identified and selected from the entire S&T community. The objective behind selecting a policy community that directly deals with S&T matters was to minimize sample heterogeneity. They were selected using the purposive and snowball sampling methods. The major problem with these methods was that, there was no randomization in the selection of the sample frame. This may affect the precision of the findings. Interviews were carried out to establish the individual's perceptions of the major challenges confronting the S&T policy formation, the individual and institutional roles in policy formation and individual perceptions on institutional capacity in policy formation. Furthermore, the interviews were designed to solicit an in-depth comprehension of the special problems and challenges that the S&T policy making process encountered during the period under study.

The study also administered twenty-two (22) questionnaires to four clusters of organizations-see Table 1 on page 22. Of the 22 questionnaires administered, 17 were completed and returned. Thus, the response rate is 77, 3%. This is a satisfactory response.

Of the completed questionnaires, 8 (47, 1%) came from parastatals followed by 4 (23, 5%) from the private sector, 3 (17, 6%) from the government and 2 (11, 8%) from the research institutes. The pattern reflects that the private sector and research institutes had 100% response rate.

#### **1.5 Results**

The results and analysis of data from the study are presented and discussed below:

##### **1.5.1 Interview findings discussion**

The institutional arrangements for S&T policy development in Zimbabwe were described as “ponderous”, “cumbersome and disastrous”, “a goddam mish-mash” by Research Council of Zimbabwe (RCZ), Minister of Information, Communication and Technology Nelson Chamisa, and Scientific Industrial Research and Development Centre (SIRDC) respectively. One Research Council of Zimbabwe (RCZ) official reflected that the confusion has been beneficial and inevitable. “As I look at it now, it probably was good to have it ‘ponderous’ since we had to get the state and S&T units activated in this area”. The activation was done through workshops, seminars and public hearings. Interview findings are discussed under the following themes:

##### **1.5.2 Role of the Executive**

Though the S&T idea was mooted in 1981 by the then Prime Minister, the RCZ observed that his role in policy formulation was “increasingly passive”. Standard Association of Zimbabwe (SAZ) echoed the same sentiments arguing that “the role of the Executive was for most part passive”. The role of the Executive in general and the President in particular was partially visible and conspicuous at the institutional agenda setting. The study notes that from 1981 President Mugabe opened various symposia (for example, in 1988 he opened a Symposium on “Role of S&T in Social and Economic Development- The Herald, 12/10/88), conferences, workshops and seminars on S&T development. In many of these, he registered disappointment with the incredible slow pace of technological development. The study notes that the opaqueness of the executive in S&T policy formation was due to the fact that the attention was diverted for quite very long. Making a public pronouncement is one thing and executing defined policy positions is another thing.

The study notes that policy implementation requires determined leadership commitment and will in form of resource support, for example, budgetary support.

### 1.5.3 Gestation Period

Mafoti, Chief Executive Officer of Scientific Industrial Research and Development Centre (SIRDC) observed that the gestation period for S&T policy formation was lengthened by “inadequacy of policy knowledge” on the part of S&T officers at Ministry level, especially at the policy formulation stage. A major problem at the policy formulation stage was the lack of baseline data, without which policy formulation was forced to rely unduly on guesswork or even on the personal or idiosyncratic preferences of policy makers. Benson Zwizwai, Director of Science and Technology Department with the Institute of Development Studies of University of Zimbabwe (IDSZ) was of the view that the real problem was not inadequate policy knowledge but rather the RCZ was constrained by “the cloak of confidentiality that shrouds its activities.” He further noted that the RCZ prepared the S&T policy draft in secrecy in 2000 and was reluctant to discuss with other S&T stakeholders.

Responding to allegations that the Research Council of Zimbabwe drafted the National S&T policy in secrecy, one of the RCZ officials fumed and dismissed such allegations as “baseless and ill-advised.” The RCZ conceded that conferences, workshops and public seminars, for example, the National Seminar of 2001 convened by the Office of the President and Cabinet were major means through which the attentive public interacted and shared ideas, experiences and research findings. The study noted that the RCZ was not the problem; rather the S&T policy institutional arrangement was anarchical and to a greater extent delayed the S&T policy formation in Zimbabwe. The structure of the decision making process around S&T was the source of many difficulties in S&T policy formation. There was in particular a lack of coordination between the different decision making authorities and levels, leading to overlapping efforts and difficulties in the creation of interdisciplinary teams. The RCZ was reporting to one of Vice Presidents and was instructed to submit the National S&T policy by end of 2000. At the same time, the Ministry of Higher Education and Technology had engaged the IDSZ to prepare the National S&T policy. The study notes that the S&T policy took a longer gestation period to formulate because the executive did not rank it highly on its priority list. The idea was more to get a bill than a strong working bill.

### 1.5.4 Absence of Industrial Policy

Before the Government could promulgate the S & T policy, it had to formulate the industrial policy first. The Ministry of Industry and Commerce had the responsibility for industrial policy formulation. The Ministry worked on this for 19 years but the industrial policy was only produced in March 1999. This revelation shows that a long gestation period is something endemic in government. The absence of industrial policy created coordination problems for S&T policy formulators. The study notes that industrialization efforts on one hand and scientific and technological efforts on the other were completely stand alone activities. This was regrettable because instruments that promote industrialization and scientific and technological development are highly complementary, for example, foreign direct investment, tax exemption and rebates among others.

### 1.5.5 Capacity in S & T Policy Formulation

Mbizvo W. T. the Permanent Secretary of Ministry of Higher and Tertiary Education (MoHTE) argued that the country did not have “mobilized capacity” in the areas of S&T policy development. The failure by the Research Council of Zimbabwe to come up with an S&T policy after more than seven years of effort is a clear indication of this lack of capacity. When the MoHTE was assigned the S&T portfolio, it was not allocated additional financial resources to recruit personnel to work in the technology division. Hence, the Ministry did not have adequate human resources to formulate the S & T policy. However, the study notes that mobilized capacity was available. The Institute of Development Studies of the University of Zimbabwe mobilized human and financial resources through the Science and Technology Dialogue Forum. The forum managed to bring together various S&T stakeholders such as Institute of Development of studies of University of Zimbabwe and Economics Department at the University of Zimbabwe, Zimbabwe Consultancy, Confederation of Zimbabwe Industries, UNIDO, World Bank, Government agencies and Intermediate Technology Development Groups and the following observations were made:

- Demand-driven research is restricted in Zimbabwe.
- Immediate end-users of research results-government, public and private institutions do not benefit directly and there is a weak relationship between public policy and the S&T policy studies.
- Zimbabwe must create institutional linkage mechanisms for the S&T policy dialogue.

- Zimbabwe stalled S&T development through absence of the S&T policy.

The funding for the foregoing Science and Technology Dialogue Forum came from Carnegie Corporation of New York, the African Technology Policy Studies Network and the United Nations Institute for Economic and Development Planning. This reveals that mobilized capacity was available but what is not clear is the utilization of the mobilized resources as the interviewed officials with the Ministry of Science and Technology noted that the “output and product of the Science and Technology Dialogue Forum was not submitted to Cabinet by the MoHTE.” The reason for this was that the Cabinet reshuffle in 2000 resulted in the Minister of Higher and Tertiary Education being transferred to the Ministry of Foreign Affairs.

The abolished Ministry of Policy Implementation conceded that in the first decade of independence, “improper deployment of policy analysts in government ministries,” stalled the S & T progress. This dovetails with 26% respondents that asserted that S & T formulation was constrained by “mismatch or inadequate utilization of human resources”, for example, a history graduate could be found working in an S&T department. Brain drain further compounded the problem. This brain drain challenge made most S&T government institutions operate with skeletal staff, for example, the Department of Technology in the MoHTE in 1998 had two people instead of nine as a result of brain drain. According to one key informant, a government official in the Ministry of Higher and Tertiary Education brain drain was caused by the fact that “public workers received abysmally inadequate remuneration.”

### 1.5.6 Institutional Arrangements

One informant with the SAZ argued that the structure of the decision making process around S&T was the source of many difficulties in S&T development. There was in particular a lack of coordination between the different decision making activities and levels, leading to overlapping efforts and difficulties in the creation of interdisciplinary teams.

### 1.6 Questionnaire findings

Most information from senior government officials and directors and Chief Executive Officers of government agencies such as Research Council Zimbabwe (RCZ), Scientific and Industrial Development Centre (SIRDC) revealed that the S&T institutions were hindered by a number of problems, among them are:

- i. Lack of effective coordination of R&D activities ;
- ii. Shortage of adequate funds to finance the necessary R&D activities;
- iii. Under utilization of human and material resources, partly as a result of (i) and (ii) above and
- iv. Weak link between R&D institutions and productive activities in the economy.

#### 1.6.1 Capacity in S&T Policy Formulation

Five respondents from parastatals agreed that government’s political will and commitment to S&T development through creation of institutions was just piecemeal and ad-hoc efforts were made to total S&T development. The Chairperson of **SIRDC** argued that, “creating an institution is one thing but making it deliver the goods is another, for it depends on what capacities are created and how clear the policies that oversee government are.” A review of the past budget estimates revealed that S&T institutions were financially incapacitated. The allocation of funds to ministries that had the technology portfolio was skewed in favour of recurrent expenditure as **Table 2** on page 22 depicts.

The **Table 2** on page 22 responds to the following question:

Does the public sector/private sector have the capacity (financial, material, labour, institutional) to formulate S&T policies adequately? **Table 2** on page 22 shows that government allocated more funds to recurrent expenditure than capital expenditure. The rule of thumb should be 1:3 or 30%:70%, i.e. capital expenditure and recurrent expenditure respectively. This ideal ratio is according to International Monetary Fund (IMF) 2001 Budget Guidelines. The percentages reveal that the recurrent expenditure substantially outweighed the capital expenditure. The slight increase in percentages for capital expenditure from 1986 to 1996 was due to the construction of the National University of Science and Technology (NUST), Bindura University of Science Education and Chinhoyi University of Technology.

The percentages tally with the Confederation of Zimbabwe Industries (CZI) Official who conceded that the, “formulation stage was pregnant with opposition, conflicts and compromises between the government and the industry”, prompted by the Ministry of Finance’s “excessive fiscal conservatism”. The Ministry of finance did not buy in the S&T proposals made to it by CZI such as creation of tax exemption Technology Development Reserve (TDR), reducing import duties for imported research equipment and cut excise tax on technology. In addition, a CZI official noted that the Ministry of Finance has not been focusing on the intended output, but “almost exclusively on financial concerns.” This explains why the Research and Development Fund that was supposed to be formed in 1998 never came into being. The major reason was that Research & Development Fund by its very nature was not capable of producing market style returns. Director of Institute of Development Studies of the University of Zimbabwe (IDSZ) asserted that “speculative and rent seeking activities” focused on maximum gain in a minimum time frame were significant “economic engines crowding out technological investments” that entail longer gestation periods for economic payoff. As a result, S&T policy formulation in Zimbabwe could not move with the space it deserved.

### **1.6.2 S&T Development during the Economic Structural Adjustment Programme Era**

The 1990 decade saw the S&T issue just lying dormant. Economic Structural Adjustment Programme (ESAP, 1991-1995) had not even a single section/page for S&T development. Most respondents converged on the idea that ESAP favored “no industry policy” and a liberal trade regime hence it explains why S&T issues were silent. The S&T issues were contained in the SFYNDP (1991-1995) which was sidelined in favour of ESAP for implementation. The study notes that the globalization favoured trade and economic liberalization and resultantly the Breton Woods Institutions as designers of Economic Structural Adjustment Programme saw the S&T policy as irrelevant.

### **1.6.3 The Dynamics of S&T Policy Formulation: A Synthesis**

There are numerous explanations why Zimbabwe has for a long time not been able to come up with a national S&T policy. There is consensus from people interviewed and survey respondents that the responsibility of S&T policy formulation has been shifting among ministries. This has resulted in discontinuities and abandonment of earlier efforts. Mbizvo the Permanent Secretary of the Ministry of Higher and Tertiary Education confirmed this when he said it was the then Minister of Higher Education and Technology, Stan Mudenge who solicited the assistance of ZIDS in drafting a national S&T policy. But the Minister was transferred to the Ministry of Foreign Affairs and was replaced by a new Minister who was unaware of the efforts in S&T policy development. This provided an ample opportunity for the technocrats in the ministry to sideline the S&T policy document drafted by the ZIDS and the document was not tabled for consideration by the cabinet. The Principal Director in the then Ministry of Policy Implementation argued that administrative and management structures of S&T were not very visible and clear. From 1994 to 2000, the then MoHTE had the technology portfolio while the RCZ had the statutory mandate to advise the government on matters of S&T policy through an act of parliament. But RCZ and MoHET and the division of responsibilities among these were not clear.

The development of the S&T policy in Zimbabwe was delayed due to lack of involvement and consultation. The CZI made consultations to its members in 1998 and represented the member’s views to the MoHTE. The CZI and MoHTE were supposed to meet in February 1999. Alarmingly, CZI suddenly received an invitation letter on the 3<sup>rd</sup> of June 2002 for the launching of the national S&T policy. The S&T policy development was shrouded in secrecy as it kept S&T stakeholders in the dark. It indicates that the S&T policy was simply adopted by the government and other stakeholders who simply endorsed what the government had already concluded.

## **1.7 Conclusion and Recommendations**

The findings disclosed that one of the chief institutional problems thereby delaying the formulation and finalization of the S&T policy was the fragmentation of the policy making process. There was absolutely no institutional coherence and integration. The S&T institutional arrangement evoked the slowness, the ponderousness and the complication of procedures for the national S&T development. As pointed out earlier, the institutional dissonance among the then Minister of Higher Education and Technology, Institute of Development Studies and Research Council of Zimbabwe revealed that the S&T policy development and formulation were inevitable. A skewed budget allocation in favour of recurrent expenditure constrains S&T development. In light of these findings, the following recommendations were made:

- Institutional capacity strengthening for policy development – the study demonstrates the lack of synergy, integration and coordination among the S&T institutions. Hence harmonization and synchronization of institutions is a determining factor. This will avoid institutional fragmentation.
- Creation of Science and Technology budget – if properly administered, the skewness of budgetary allocations will be avoided. This approach worked exceptionally well in South Korea hence there is need to study the South Korean scenario for the benefit of the Zimbabwean efforts.
- Infrastructural Policy Management- There should a built in mechanism within institutions to ensure transparency, accountability and responsiveness to the sentiments expressed by the S&T stakeholders in an effort to get a broader view on the way-forward.

**Table 1: Organizations to Whom Questionnaires Were Administered**

Type of Organizations	Number of Questionnaires		%of Total Returns
	Sent	Returned	
Government	6	3	17,6
Private(SAZ)	4	4	23,3
Parastatals(RCZ,SIRDC,IDSZ)	10	8	47,1
Research Institutes(SAPES)	2	2	11,8
Total	22	17	100

**Table 2: S&T Funds Allocated Between Capital and Recurrent Expenditure**

Year	Recurrent expenditure Z\$(1)	Capital Expenditure Z\$(2)	Total Z\$(3)	%:2/3
1982	23 393 000	1724 000	25 117 000	7.0
1984	27 210 000	2924 000	30 134 000	10.0
1986	32 411 000	6 931 000	39 342 000	18.0
1988	37 986 000	10 263 000	48 249 000	21.3
1990	59 251 000	11 111 000	70 362 000	15.8
1992	77 369 000	18 691 000	96 060 000	19.5
1994	115 168 000	19 004 000	134 172 000	14.1
1996	279 980 000	61 641 000	359 621 000	17.1
1998	598 370 000	101 630 000	700 000 000	14.5
2000	1 744 900 000	249 674 000	994 574 000	12.5
2002	10 962 090 000	1 935 258 000	12 897 348 000	15.0

**Source:** The study compiled respective yearly Budget Estimates by the Government of Zimbabwe from 1982 to 2002.

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