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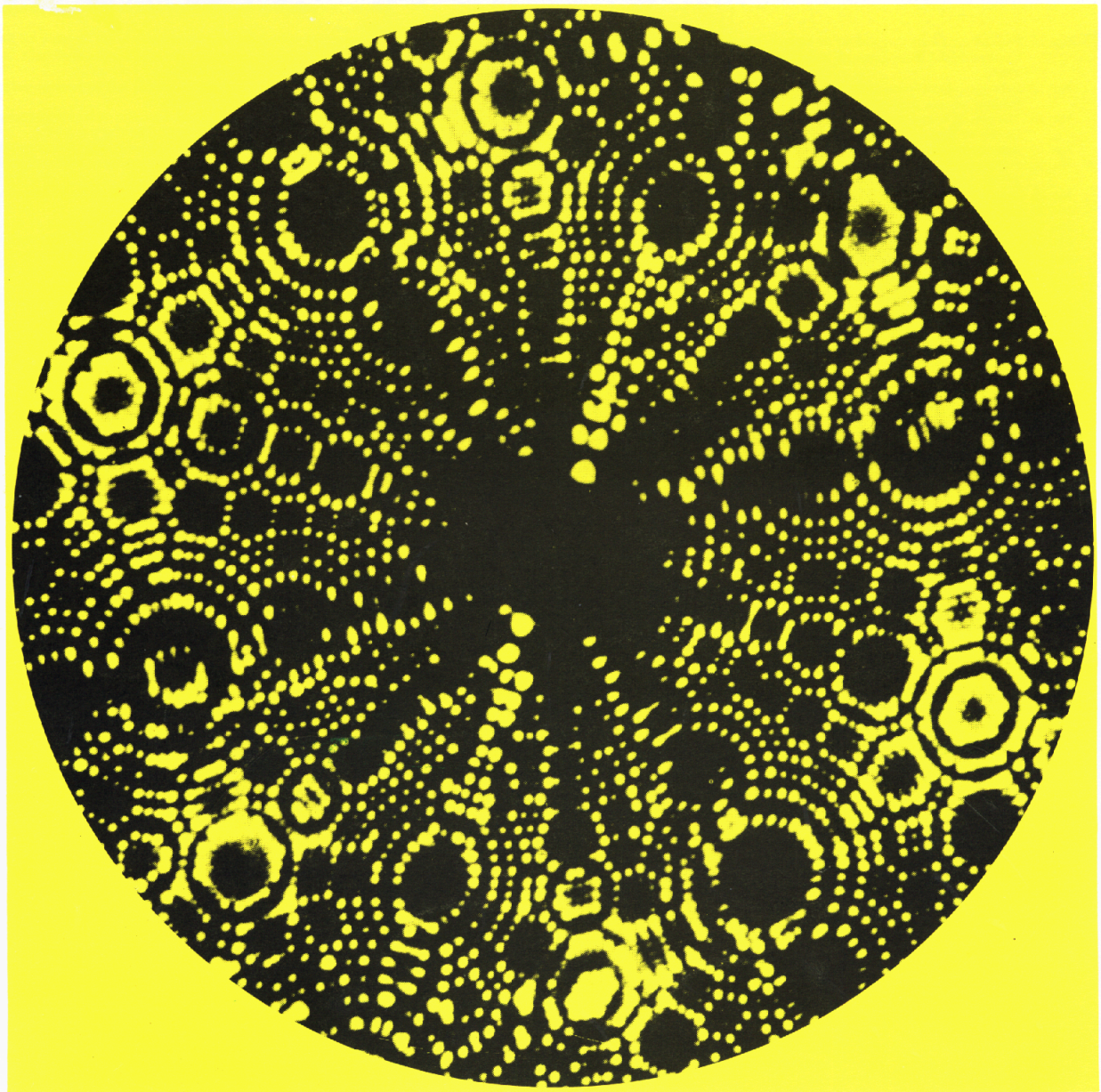
The management of science and technology in transition economies



Science policy studies and documents

UNESCO

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Preface

The UNESCO series 'Science policy studies and documents' forms part of a programme to collect, analyse and disseminate information concerning the organisation of scientific research and science policies in Member States, authorised by resolution 2.1131(b) adopted by the General Conference of UNESCO at its eleventh session in 1960 and confirmed by similar resolutions at each subsequent session.

This series aims at making available to those responsible for scientific research and experimental development throughout the world, factual information concerning the science policies of various Member States of the Organisation, as well as normative studies of a general character.

Country studies are carried out by the governmental authorities responsible for science policy in the Member States conncerned. The selection of the countries in which studies on the national science policy are undertaken reflects the following criteria: the originality of the methods used in the planning and execution of the national science policy, the extent of the practical experience acquired in such fields and the level of economic and social development attained. The geographical coverage of these studies is also taken into account.

Normative studies deal with the planning of science policy, the organisation and administration of scientific and technological research and other questions relating to science policy.

The series also includes reports of international meetings on science policy convened by UNESCO.

As a general rule, the country studies are published in one language only, either English or French, whereas the normative studies are published in both languages: reports of international meetings are usually published in the main language(s) used in the region.

The present report forms part of the activities of a forum on the reorganisation of science in Central and Eastern Europe, established within the framework of the UNESCO's sub-programme 'Management of Science and Technology Development'. The report is the result of many contributions. Preliminary ideas and suggestions were solicited from all Members of the International Council for Science Policy Studies (ICPS) and an initial framework was developed early in 1991. A Working Group was then set up* and met informally in Budapest to discuss the proposal. The participants were: Dr. Katalin Balazs, Institute of Economics, Hungarian Academy of Sciences, Hungary; Mrs. Martine Barrere, France; Dr. Dmitry Demchenko, Analytical Center of the Russian Academy of Sciences, Russia; Mr. Georges Ferné, Secretary of ICSPS, France; Prof. Michael Gibbons, Director of PREST, University of Manchester, United Kingdom; Dr. Elisabeth Helander, The Academy of Finland, Finland; Dr. Ileana Ionescu-Sisesti, Academy of Science, Romania; Dr. Andzej H. Jasinski, Market Economy Enterprise Foundation, Poland; Dr. Mira Lenardic, Institute of Economics, Croatia; Dr. Kostadinka Simeonova, Center of Science Policy, Academy of Sciences, Bulgaria; Dr. Tibor Vasko Iiasa; Ms. Helgard Wienert-Cakim, OECD; Mr. Vladislav Kotchetkov, UNESCO.

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* All participants contributed informally and in their private capacities. The views they expressed and which are reflected in the report are not necessarily shared by their organisations.

Written contributions were then prepared by several of these participants (Balazs, Demchenko, Ferné, Ionescu-Sisesti, Jasinski, Lenardic, Simeonova and Vasko). Additional papers and suggestions came from Dr. Sergey Glaziev, Deputy Director, International Centre for Research into Economic Transformation, Russia, from Mr. Vladislav Kotchetkov, Chief of the Science, Technology and Society Unit at UNESCO, and from Prof. Helga Nowotny, Institute for Social Studies of Science, University of Vienna, Austria.

The draft report was further discussed at an interim meeting in Venice (Italy) in spring 1992 and finalised in July 1992 in Varna (Bulgaria). In addition to previous members of the Working Group, the group benefited from the participation and additional valuable inputs from: Dr. Peter Collins, Director of the Science and Engineering Policy Studies Unit, The Royal Society, United Kingdom; Prof. Dimitri Piskunov, Director, Analytical Center, Russian Academy of Sciences, Russia; and Dr. Georgi Angelov, Director of the National Centre for Educational and Science Studies (NCESS), Dr. Magdalena Ivanova, Financial Department, Ministry of Education and Science, Dr. Lyuben Popov, Adviser to the Minister, Ministry of Education and Science, all from Bulgaria.

It is on the basis of all these contributions that the final report was edited by Georges Ferné.

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Introduction

Science and technology (S&T) policies cover a broad range of coherent government actions, including in particular the support of research in areas where market forces are not thought to be sufficient, and strategic research in areas where governments have a major responsibility; the provision of incentives for the private sector to effectively undertake economically relevant innovation-oriented activities; and the establishment of mechanisms and processes that will facilitate the exploitation of research results and encourage innovations that are both socially desirable and commercially viable.

In a difficult situation, Central and Eastern European countries currently attempt to develop such S&T policies. The major goals pursued are to: (i) facilitate the current transition to market economies; and (ii) lay the foundations of a new S&T system that will be fully integrated to the new societies expected to emerge once the transition is over.

In this task, they are confronted by five different sets of contradictions:

- the need to maintain support of basic research, which holds a key for future innovation capabilities - while national budgets suffer from large deficits and there is enormous pressure to reduce public expenditures.

- the need to reorganise science in order to promote freedom, flexibility, responsibility and democracy - while existing scientific institutions must be protected from disruption or even destruction.

- the need to foster integration of the different components of the research system, in particular by bringing research and education closer - when there are huge gaps between the research capabilities of the academies and of the universities.

- The need to introduce market-oriented behaviour in the research system - while there is no science-oriented sector in the fledgling market economies.

- the overall concern with increasing the contributions of S&T to economic and social development - against a background of disillusion and scepticism largely due to promises which have too often been made in the past, without corresponding accomplishments.

These contradictions are at the core of the major challenges confronting the S&T policy decision-makers of the countries concerned. The challenges are enormous, and without historic precedent that could suggest which road could be followed, and how. There is no model to be copied, no ready-made recipe for the management of science and technology: each country will find its own approach, in light of its history, structures and traditions. The experiences of those who have been the most successful in this area - essentially the OECD Member countries - are very diverse, and do not provide a 'blueprint' for the organisation and management of scientific and technological resources. They will, however, yield general lessons about the nature, potential goals and limitations of science and technology policies in industrial societies and in the current international context.

This report will first provide an overall assessment of the place of S&T policies in Market economies; it will then attempt a general evaluation of the scientific and technological base available to transition economies as instruments for economic growth and development; and it will finally formulate specific conclusions and recommendations for consideration by Central and Eastern European countries.

Throughout this report, the notion of 'science' will be taken in its traditional European acception, as covering the whole scope of academic disciplines - the humanities and social sciences as well as the engineering sciences. It will thus deal with the entire scope of S&T activities. This does not mean, however, that the differences between science and technology are not recognised. The fact that they often require different policy approaches might be somewhat occulted in this report, because of the focus on structural changes in the research system, and on maximizing the contributions of S&T to economic and social development.