

Convinced that the current climate of governmental, scientific and public opinion makes the moment opportune for the General Conference to formulate principles for the assistance of member governments desirous of ensuring fair status for the workers concerned;

Recalling that much valuable work in this respect has already been accomplished both in respect of workers generally and in respect of scientific researchers in particular, notably by the international instruments and other texts recalled in this

Preamble,. and in the annex to this recommendation,

Conscious that the phenomenon frequently known as the `Brain Drain' of scientific researchers has in the past caused widespread anxiety, and that to certain Member States it continues to be a matter of considerable pre-occupation; having present in mind, in this respect, the paramount needs of the developing countries; and desiring accordingly to give scientific re-searchers stronger reasons for serving in countries and areas which stand most in need of their services;

Convinced that similar questions arise in all countries with regard to the status of scientific researchers and that these questions-call for the adoption of the common approaches and so far as practicable the application of the common standards and measures which it is the purpose of this recommendation to set out;

However, taking fully into account, in the adoption and application of this Recommendation, the great diversity of the laws, regulations and customs which, in different countries, determine the pattern and organization of research work and experimental development in science and technology,

Desiring for these reasons to complement the standards and recommendations set out in the laws and decrees of every country and sanctioned by its customs and those contained in the international instruments and other documents referred to in this Preamble and in the annex to this recommendation, by provisions relating to questions of central concern to scientific researchers,

Having before it, as item 26 of the agenda of the session, proposals concerning the status of scientific researchers,

Having decided, at its seventeenth session, that these proposals should take the form of a recommendation to Member States,

Adopts this Recommendation this twentieth day of November 1974.

The General Conference recommends that Member States should apply the following provisions by taking whatever legislative or other steps may be required to apply within 'their respective territories the principles and norms set forth in this recommendation.

The General Conference recommends that Member States should bring this recommendation to the attention of the authorities, institutions and enterprises responsible for the conduct of research and experimental development and the application of its results, and of the various organizations representing or promoting the interests of scientific researchers in association, and other interested parties.

The General Conference recommends that Member States should report to it, on dates and in a manner to be determined by it, on the action they have taken to give effect to this recommendation

I.Scope of application

1. For the purposes of this recommendation:

(a)(i) The word `science' signifies the enterprise whereby mankind, acting individually or in small or large groups, makes an organized attempt, by means of the objective study of observed phenomena, to discover and master the chain of causalities; brings together in a co-ordinated form the resultant sub-systems of knowledge by means of systematic reflection and conceptualization, often largely expressed in the symbols of mathematics; and thereby furnishes itself with the opportunity of using, to its own advantage, understanding of the processes and phenomena occurring in nature and society.
(ii) The expression `the sciences' signifies a complex of fact and hypothesis, in

which the theoretical element is normally capable of being validated, and to that extent includes the sciences concerned with social facts and phenomena.

(b) The word `technology' signifies such knowledge as relates directly to the production or improvement of goods or services.

(c) (i) The expression `scientific research' signifies those processes of study, experiment, conceptualization and theory-testing involved in the generation of scientific knowledge, as described in paragraphs I(a)(i) and I(a)(ii) above.
(ii) The expression `experimental development' signifies the processes of adaptation, testing and refinement, which lead to the point of practical applicability.

(d) (i) The expression `scientific researchers' signifies those persons responsible for investigating a specific domain in science or technology.
(ii) On the basis of the provisions of this recommendation, each Member State may determine the criteria for inclusion in the category of persons recognized as scientific researchers (such as possession of diplomas, degrees, academic titles or functions), as well as the exceptions to be allowed for.

(e) The word `status' as used in relation to scientific researchers signifies the standing or regard accorded them, as evidenced, first, by the level of appreciation both of the duties and responsibilities inherent in their function and of their competence in performing them, and, secondly, by the rights, working conditions, material assistance and moral support which they enjoy for the accomplishment of their task.

2. This recommendation applies to all scientific researchers, irrespective of:

(a) the legal status of their employer, or' the type of organization or establishment in which they work;

(b) their scientific or technological fields of specialization;

(c) the motivation underlying the scientific research and experimental development in which they engage;

(d) the kind of application to which that scientific research and experimental

development relates most immediately.

3. In the case of scientific researchers performing scientific research and experimental development on a part-time basis, this recommendation applies to them only at such times and in such contexts as they are engaged upon the activity of scientific research and experimental development.

II. Scientific researchers in the context of national policy-making

4. Each Member State should strive to use scientific and technological knowledge for the enhancement of the cultural and material well-being of its citizens, and to further the United Nations ideals and objectives. To attain this objective, each Member State should equip itself with the personnel, institutions and mechanisms necessary for developing and putting into practice national science and technology policies aimed at directing scientific research and experimental development efforts to the achievement of national goals while according a sufficient place to science per se. By the policies they adopt in respect of science and technology, by the way in which they use science and technology in policy-making generally, and by their treatment of scientific researchers in particular, Member States should demonstrate that science and technology are not activities to be carried on in isolation but part of the nations' integrated effort to set up a society that will be more humane and really just.

5. At all appropriate stages of their national planning generally, and of their planning in science and technology specifically, Member States should:

(a) treat public funding of scientific research and experimental development as a form of public investment the returns on which are, for the most part, necessarily long term; and

(b) take all appropriate measures to ensure that the justification for, and indeed the indispensability of such expenditure is held constantly before public opinion.

6. Member States should make every effort to translate into terms of international policies and practices, their awareness of the need to apply science and technology in a great variety of specific fields of wider than national concern: namely, such vast and complex problems as the preservation of international peace and the elimination of want and other problems which can only be effectively tackled on an international basis, such as pollution monitoring and control, weather forecasting and earthquake prediction.

7. Member States should cultivate opportunities for scientific researchers to participate in the outlining of national scientific research and experimental development policy. In particular, each Member State should ensure that these processes are supported by appropriate institutional mechanisms enjoying adequate advice and assistance from scientific researchers and their professional organizations.

8. Each Member State should institute procedures adapted to its needs for ensuring that, in the performance of publicly-supported scientific research and experimental development, scientific researchers respect public accountability while at the same time enjoying the degree of autonomy appropriate to their task and to the advancement of science and technology. It should be fully taken into account that creative activities of scientific researchers should be promoted in the national science policy on the basis of utmost respect for the autonomy and freedom of research necessary to scientific progress.

9. With the above ends in view, and with respect for the principle of freedom of movement of scientific researchers, Member States should be concerned to create that general climate, and to provide those specific measures for the moral and material support and encouragement of scientific researchers, as will:

(a) ensure that young people of high calibre find sufficient attraction in the vocation, and sufficient confidence in scientific research and experimental development as a career offering reasonable prospects and a fair degree of security, to maintain a constantly adequate regeneration of the nation's scientific and technological personnel;

(b) facilitate the emergence and stimulate the appropriate growth, among its own citizens, of a body of scientific researchers regarding themselves and regarded by their colleagues throughout the world as worthy members of the international scientific and technological community;

(c) encourage a situation in which the majority of scientific researchers or young people who aspire to become scientific researchers are provided with the necessary incentives to work in the service of their country and to return there if they seek some of their education, training or experience abroad.

III. The initial education and training of scientific researchers

10. Member States should have regard for the fact that effective scientific research calls for scientific researchers of integrity and maturity, combining high moral and intellectual qualities.

11. Among the measures which Member States should take to assist the emergence of scientific researchers of this high calibre are:

(a) ensuring that, without discrimination on the basis of race, colour, sex, language, religion, political or other opinion, national or social origin, economic condition or birth, all citizens enjoy equal opportunities for the initial education and training needed to qualify for scientific research work, as well as ensuring that all citizens who succeed in so qualifying enjoy equal access to available employment in scientific research;

(b) encouragement of the spirit of community service as an important element in such education and training for scientific workers.

12. So far as is compatible with the necessary and proper independence of educators, Member States should lend their support to all educational initiatives designed to foster that spirit, such as :

(a) the incorporation or development, in the -curricula and courses concerning the natural sciences and technology, of elements of social and environmental sciences;

(b) the development and use of educational techniques for awakening and stimulating such personal gualities and habits of mind as:

(i) disinterestedness and intellectual integrity;

(ii) the ability to review a problem or situation in perspective and in proportion, with all its human implications; the search for new knowledge and which may at first sight seem to be of a technical nature only;

 (iii) skill in isolating the civic and ethical implications, in issues involving
 (iv) vigilance as to the probable and possible social and ecological con-sequences of scientific research and experimental development activities ; (v) willingness to communicate with others not only in scientific and technological

circles but also outside those circles, which implies willingness to work in a team and in a multi-occupational context.

IV. The vocation of the scientific researcher

13. Member States should bear in mind that the scientific researchers' sense of vocation can be powerfully reinforced if he is encouraged to think of his work in terms of service both to his fellow countrymen and to his fellow human beings in general. Member States should seek, in their treatment of and attitude towards scientific researchers, to express encouragement for scientific research and experimental development performed in this broad spirit of community service.

The civic and ethical aspect of scientific research

14. Member States should seek to encourage conditions in which scientific researchers, with the support of the public authorities, have the responsibility and the right:

(a) to work in a spirit of intellectual freedom to pursue, expound and defend the scientific truth as they see it;

(b) to contribute to the definition of the aims and objectives of the programmes in which they are engaged and to the determination of the methods to be adopted which should be humanely, socially and ecologically responsible;

(c) to express themselves freely on the human, social or ecological value of certain projects and in the last resort withdraw from those projects if their conscience so dictates :

(d) to contribute positively and constructively to the fabric of science, culture and education in their own country, as well as to the achievement of national goals, the enhancement of their fellow citizens' well-being, and the furtherance of the international ideals and objectives of the United Nations; it being understood that Member States, when acting as employers of scientific researchers, should specify as explicitly and narrowly as possible the cases in which

they deem it necessary to depart from the principles set out in paragraphs (a) to (d) above.

15. Member States should take all appropriate steps to urge all other employers of scientific researchers to follow the recommendations contained in paragraph 14.

The international aspect of scientific research

16. Member States should recognize that scientific researchers encounter, with increasing frequency, situations in which the scientific research and experimental development on which they are engaged has an international dimension; and should endeavour to assist scientific researchers to exploit such situations in the furtherance of international peace, co-operation and understanding, and the common welfare of mankind.

17. Member States should in particular provide all possible support to the initiatives of scientific researchers undertaken in search of improved under-standing of factors involved in the survival and well-being of mankind as a whole.

18. Each Member State should enlist the knowledge, industry and idealism of those of its citizens who are scientific researchers, especially of the younger generation, in the task of furnishing as generous a contribution as its resources can permit to the world's scientific and technological research effort. Member States should welcome all the advice and assistance scientific researchers can provide, in socio-economic development efforts that will contribute to the con-solidation of an authentic culture and of national sovereignty

19. In order that the full potentialities of scientific and technological knowledge be promptly geared to the benefit of all peoples, Member States should urge scientific researchers to keep in mind the principles set out in paragraphs 16, 17 and 18.

V. Conditions for success on the part of scientific researchers

20. Member States should:

(a) bear in mind that the public interest, as well as that of scientific researchers, requires moral support and material assistance conducive to successful performance in scientific research and experimental development by scientific researchers:

(b) recognize that in this respect they have, a employers of scientific researchers, a leading responsibility and should attempt to set an example to other employers of such researchers;

(c) urge all other employers of scientific researchers to pay close attention to the provision of satisfactory working conditions for scientific researchers, notably in respect of all the provisions of the present Section;

(d) ensure that scientific researchers enjoy conditions of work and pay commensurate with their status and performance without discrimination on the basis of sex, language, age, religion or national origin.

Adequate career development prospects and facilities

21. Member States should draw up, preferably within the framework of a comprehensive national manpower policy, policies in respect of employment which adequately cover the needs of scientific researchers, in particular by:

(a) providing scientific researchers in their direct employment with adequate offering challenging opportunities for young scientific researchers to do career development prospects and facilities, though not necessarily exclusively in the fields of scientific research and experimental development; and encouraging non-governmental employers to do likewise;

(b) making every effort to plan scientific research and experimental develop ment in such a way that the scientific researchers concerned are not sub jected, merely by the nature of their work, to avoidable hardship;

(c) considering the provision of the necessary funds for facilities for readapta tion and redeployment in respect of the scientific researchers in their per manent employ, as an integral part of scientific research and experimental development planning, especially, but not exclusively, in the case of programmes or projects designed as limited duration activites; and where these facilities are not possible, by providing appropriate compensatory arrangements

(d) offering challenging opportunities for young scientific researchers to do significant scientific research and experimental development, in accordance with their abilities

Permanent self re-education

22. Member States should seek to encourage that:

(a) like other categories of workers facing similar problems, scientific researchers enjoy opportunities for keeping themselves up to date in their own and in related subjects, by attendance at conferences, by free access to libraries and other sources of information, and by participation in educational or vocational courses; and where necessary, scientific researchers should have the opportunity to undergo further scientific training with a view to transferring to another branch of scientific activity; career development prospects and facilities, though not necessarily exclusively

(b) appropriate facilities are provided for this purpose.

Mobility in general and the civil service in particular

23. Member States should take measures to encourage and facilitate, as part of a comprehensive national policy for highly-qualified manpower, the interchange or mobility of scientific researchers as between scientific research and experimental development service in the government and in the higher education and productive enterprise contexts.

24. Member States should also bear in mind that the machinery of government at all levels can benefit from the special skills and insights provided by scientific researchers. All Member States could therefore profitably benefit from a careful comparative examination of the experience gained in those Member States which have introduced salary scales and other conditions of employment specially designed for scientific researchers, with a view to deter needs. Matters which appear to require particular attention in this respect are:

 (a) optimum utilization of scientific researchers within the framework of a comprehensive national policy for highly-qualified manpower;

(b) the desirability of providing procedures with all the necessary guarantees allowing for the periodic review of the material conditions of scientific researchers to ensure that they remain equitably comparable with those of other workers having equivalent experience and qualifications and in keeping with the country's standard of living; mining to what extent such schemes would help meet their own national

(c) the possibility of providing adequate career development prospects in public research bodies; as well as the need to give scientifically or tech= nologically qualified researchers the option of transferring from scientific research and experimental development positions to administrative positions.

25. Member States should furthermore turn to advantage the fact that science and technology can be stimulated by close contact with other spheres of national activity, and vice versa. Member States should accordingly take care not to discourage scientific researchers whose predilections and talents, initially cultivated in the scientific research and experimental development context proper, lead them to progress into cognate activities. Member States should on the contrary be vigilant to encourage those scientific researchers whose original scientific research and experimental development y acquired experience reveal potentialities lying in such fields as management of scientific research and experimental development or the broader field of science and technology policies as a whole, to develop to the full their talents in these directions.

Participation in international scientific and technological gatherings

26. Member States should actively promote the interplay of ideas and information among scientific researchers throughout the world, which is vital to the healthy development of science and technology; and to this end should take all measures necessary to ensure that scientific researchers are enabled, throughout their careers, to participate in international scientific and technological gatherings and to travel abroad.

27. Member States should furthermore see to it that all governmental or quasigovernmental organizations in which or under whose authority scientific research and experimental development are performed, regularly devote portion of their, budget to financing the participation at such international scientific and technological gatherings, of scientific researchers in their employ. Access by scientific researchers to positions of greater responsibility with corresponding rewards

28. Member States should encourage in practice that decisions as to access by scientific researchers in their employ to positions of greater responsibility and correspondingly higher rewards, are formulated essentially on the basis of fair and realistic appraisal of the capacities of the persons concerned, as evidenced by their current or recent performances, as well as on the basis of formal or academic evidence of knowledge acquired or skills demonstrated by them.

Protection of health; social security

29. (a) Member States should accept that, as employers of scientific researchers, the onus is on them in accordance with national regulations, and the international instruments concerned with the protection of workers in general from hostile or dangerous environments-to guarantee so far as is reasonably possible the health and safety of the scientific researchers in their employ, as of all other persons likely to be affected by the scientific research and ex-perimental development in question. They should accordingly ensure that the managements of scientific establishments enforce appropriate safety standards; train all those in their employ in the necessary safety procedures; monitor and safeguard the health of all persons at risk; take due note of warnings of new (or possible new) hazards brought to their attention, in particular by the scientific researchers themselves, and act accordingly; ensure that the working day and rest periods are of reasonable length, the latter to include annual leave on full pay.
(b) Member States should take all appropriate steps to urge like practices on all other

30. Member States should ensure that provision is made for scientific researchers to enjoy (in common with all other workers) adequate and equitable social security arrangements appropriate to their age, sex, family situation, state of health and to the nature of the work they perform.

Promotion, appraisal, expression and recognition of creativity Promotion

31. Member States should be actively concerned to stimulate creative performance in the field of science and technology by all scientific researchers.

Appraisal

32. Member States should, as regards scientific researchers in their employ:

(a) take due account, in all procedures for appraisal of the creativity of scientific researchers, of the difficulty inherent in measuring a personal capacity which seldom manifests itself in a constant and unfluctuating form;

(b) enable, and as appropriate encourage scientific researchers in whom it appears this capacity might be profitably stimulated:

 (i) either to turn to a new field of science or technology;
 (ii) or else to progress from scientific research and experimental development to other occupations in which the experience they have acquired and the other personal qualities of which they have given proof can be put to better use in a new context.

33. Member States should urge like practices upon other employers of scientific researchers.

34. As elements pertinent to appraisal of creativity, Member States should seek to ensure that scientific researchers may:

(a) receive without hindrance the questions, criticisms and suggestions addressed to them by their colleagues throughout the world, as well as the intellectual stimulus afforded by such communications and the exchanges to which they give rise;

(b) enjoy in tranquility international acclaim warranted by their scientific merit.

35. Member States should encourage and facilitate publication of the results obtained by scientific researchers, with a view-to assisting them to acquire the reputation which they merit as well as with a view to promoting the advancement of science and technology, education and culture generally.

36. To this end, Member States should ensure that the scientific and technological writings of scientific researchers enjoy appropriate legal protection, and in particular the protection afforded by copyright law.

37. Member States should, in consultation with scientific researchers' organizations and as a matter of standard practice encourage the employers of scientific researchers, and themselves as employers seek:

(a) to regard it as the norm that scientific researchers be at liberty and

encouraged to publish the results of their work;

(b) to minimize the restrictions placed upon scientific researchers' right to publish their findings, consistent with public interest and the right of their employers and fellow workers ;

(c) to express as clearly as possible in writing in the terms and conditions of their employment the circumstances in which such restrictions are likely to apply;

(d) similarly, to make clear the procedures by which scientific researchers can ascertain whether the restrictions mentioned in this paragraph apply in 'a particular' case and by which he can appeal.

Recognition

38. Member States should demonstrate that they attach high importance to the scientific researcher's receiving appropriate moral support and material compensation for the creative effort, which is shown in his work.

39. Accordingly, Member States should:

(a) bear in mind that:

(i) the degree to which scientific researchers receive credit for and acknowledgement of their proven creativity, may affect their level of perceived job satisfaction;

(ii) job satisfaction is likely to affect performance in scientific research generally, and may affect specifically the creative element in that performance ;

(b) adopt, and urge the adoption of, appropriate treatment of scientific researchers with respect to their proven creative effort.

40. Similarly, Member States should adopt, and urge the adoption of, the following standard practices

(a) written provisions to be included in the terms and conditions of employment of scientific researchers, stating clearly what rights (if any) belong to them (and, where appropriate, other interested parties) in respect of any discovery, invention, or improvement in technical know-how which may arise in the course of the scientific research and experimental development which those researchers undertake;

(b) the attention of scientific researchers to be always drawn by the employer to h written provisions before the scientific researchers enter e

Reasonable flexibility in the interpretation and application of texts setting out the terms and conditions of employment of scientific researcher

41. Member States should seek to ensure that the performance of scientific research and experimental development be not reduced to pure routine. They should therefore see to it that all texts setting out terms of employment for, or governing the conditions of work of scientific researchers, be framed and interpreted with all the desirable flexibility to meet the requirements of science and technology. This flexibility should not however be invoked in order to impose on scientific researchers conditions that are inferior to those enjoyed by other workers of equivalent qualifications and responsibility.

The advancement of their various interests by scientific researchers in association

42. Member States should recognize it as wholly legitimate, and indeed desirable, that scientific researchers should associate to protect and promote their individual and collective interests, in bodies-such as trade unions, professional associations and learned societies, in accordance with the rights of workers in general and inspired by the principles set out in the international instruments listed in the annex to this recommendation. In all cases where it is necessary to protect the rights of scientific researchers, these organizations should have the right to support, the justified claims of such researchers.

VI. Utilization and exploitation of the present recommendation

43. Member States should strive to extend and complement their own action in respect of -the status of scientific researchers, by co-operating with all national and international organizations whose activities fall within the scope and objectives of this recommendation, in particular National Commissions for UNESCO international organizations ; organizations representing science and technology educators; employers generally; learned societies, professional associations and trade unions of scientific researchers; associations of science writers; youth organizations

44. Member States should support the work of the bodies mentioned above by the most appropriate means

45. Member States should enlist the vigilant and active co-operation of all organizations representing scientific researchers, in ensuring that the latter may, in a spirit of community service, effectively assume the responsibilities, enjoy the rights and obtain the recognition of the status described in this recommendation.

VII. Final provision

46. Where scientific researchers enjoy a status, which is, in certain respects, more favorable than that provided for in this recommendation, its terms should not be invoked to diminish the status already acquired

Annex: International instruments and other texts concerning workers in general or scientific researchers in particular

A.International conventions adopted by the International Conference of the International Labour Organisation:

the Freedom of Association and Protection of the Right to Organize Convention, 1948:

the Right to Organize and Collective Bargaining Convention, 1949;

the Equal Remuneration Convention, 1951; the Social Security (Minimum Standards) Convention, 1952;

the Discrimination (Employment and Occupation) Convention, 1952; the Radiation Protection Convention, 1960;

the Employment Injury Benefits Convention, 1964;

- the Invalidity, Old-Age and Survivors' Benefits Convention, 1967; the Medical Care and Sickness Benefits Convention, 1969;
- the Benzene Convention, 1971

B.Recommendations adopted by the International Conference of the International Labor Organization:

the Collective Agreements Recommendation, 1951;

the Voluntary Conciliation and Arbitration Recommendation, 1951; the Radiation Protection Recommendation, 1960;

the Consultation (Industrial and National Levels) Recommendation, 1960;

the Employment Injury Benefits Recommendation, 1964; the Invalidity, Old-Age and Survivors' Benefits Recommendation, 1967; the Communication within the Undertaking Recommendation, 1967; the Examination of Grievances Recommendation, 1967; the Medical Care and Sickness Benefits Recommendation, 1969; the Workers' Representatives Recommendation, 1971; the Benzene Recommendation, 1971

C. Other intergovernmental initiatives

The Resolution No. 1826 adopted by the United Nations Economic and Social Council on 10 August 1973 at its fifty-fifth session, on the 'Role of modem science and technology in the development of nations and the need to strengthen economic, technical and scientific co-operation among States'; the World Plan of Action for the Application of Science and Technology to Development, drawn'up under the auspices of the same Council; the Declaration of the United Nations Conference on the Human Environment, proclaimed at Stockholm in June 1972.

D. Prepared by the World Intellectual Property Organization (WIPO)

Model Law for Developing Countries on Inventions, 1965.

E. Prepared by the International Council of Scientific Unions (ICSU)

Texts entitled:

I. Statement on the Fundamental Character of Science II. Charter for Scientists

II. On the Dangers Arising from Unbalanced Applications of the Powers Given by Science. Cultural Organization during its eighteenth session, which was held in Paris and declared closed on the twenty-third day of November 1974. prepared by ICSU's Committee on Science and its Social Relations (CSSR) and transmitted to all members of ICSU at the request of ICSU's General Assembly (5th session, 1949). Resolution on `Free Circulation of Scientists' adopted by the 14th session of the ICSU General Assembly, Helsinki, 16-21 September 1972.

F. Prepared by the World Federation of Scientific Workers (WFSW)

Charter for scientific workers adopted by the WFSW General Assembly, February 1948.

Declaration on the rights of scientific workers adopted by the WFSW General Assembly, April 1969.

The foregoing is the authentic text of the Recommendation duly adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization during its eighteenth session, which was held in Paris and declared closed on the twenty-third day of November 1974.

IN FAITH WHEREOF we have appended our signatures this twenty-fifth day of November 1974.

The President of the General Conference The Director-General

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