SECTION 11

Solid Mechanics. Materials and Structures. Biomechanics. Acoustics

General Remarks on the Profession of Researcher and Its Evaluation

The profession of researcher is multifaceted. The quality of investment can take various forms. In their evaluation work, members of Section 11 consider **above all the scientific contributions**, while paying particular attention to the involvement and integration of researchers in their professional environment. The evaluation is based on the nature, relevance, originality, and impact of the various activities, taking into account the context (scientific, material, human) and the opportunities available to the researcher. These elements will be presented in the dossier prepared by the researcher, and the analysis of the dossiers will be conducted **considering the career stage and trajectory** of the researcher. They may also explain the opportunities and/or their ability or willingness to participate in different types of activities during the period under consideration.

Recommendations for Writing Dossiers

Section 11 works **solely based on the documents provided** by the researchers being evaluated or candidates for promotion or recruitment. These documents must be tailored to the nature of each procedure (mid-term or full-term evaluation, promotion, recruitment) and **are confidential**.

Assuming there is no single profile for a researcher, for both scientific contributions and missions of collective interest, it is advisable to clearly and concisely highlight the main themes and key facts of your activity, specifying the context and the consistency of changes and developments in your professional activity as a researcher. Thus, the inclusion of factual data (volume and complexity), or data relating to self-assessment, as well as any information that the researcher wishes to bring to the attention of the section members, may support the application.

For **contingent recruitment competitions or promotions**, the chances of success in the various stages (hearing by the section, admissibility) of a particular application can only be assessed comparatively within the set of dossiers with similar themes. It also ensures that the specificities of different types of activities are considered.

Section 11 commits not to base its assessment of scientific output on purely quantitative criteria such as the number of publications or the impact factor of the journals where this output is published, in accordance with the **principles of the DORA Declaration**. Candidates are therefore encouraged to emphasize the scientific contribution of publications, the originality of the approaches used, and their impact within the relevant disciplinary fields, **clarifying the individual contribution** of the researcher.

The section recalls the importance that CNRS attaches to evaluation compatible with the objectives of open science. The corresponding recommendations are available at https://www.cnrs.fr/fr/cnrsinfo/science-ouverte and are taken into account by the section. Similarly, in line with CNRS's national low-carbon strategy, the multiplication of short stays abroad (e.g., participation in conferences, juries) is not

considered decisive. International recognition is an essential element of evaluation but is understood by the section in a global sense as the international impact of the most significant contributions and activities.[1]

The common and specific criteria listed below are non-exhaustive and are not presented in order of importance. It is important to note that it is not necessary to meet all of these criteria. Examples of elements that may be sought in the dossiers are given **in the notes** for illustrative purposes and in a **non-exhaustive** manner.

1. Recruitment of Researchers

General Remarks on Recruitment

The criteria below will be used to evaluate all previous scientific contributions and the quality of the proposed project. As indicated above, it is not mandatory to meet all of these criteria.

Common Criteria for Recruitment

- Quality of **scientific activity** and **research project**: approach, originality, evolution.[2]
- Quality of **scientific output** (publications in peer-reviewed journals, patents, book chapters, monographs, software and libraries, data, etc.), **clarifying the role** of the researcher.[3]
- Quality of **dissemination activities** to the scientific community (provision of research data, open-source software/libraries, open hardware, participation in conferences, congresses, or seminars, efforts in open science, etc.) [4]
- Quality of **collaborations** (internal, local, national, international).[5]
- **Involvement in research training, knowledge transfer**, and other outreach activities to society.[6]
- Investment in **collective interest tasks**[7], including participation in the activities of the scientific community in the broadest sense.

[1] Distinctions or invitations abroad received personally or by collaborators or supervised individuals, conferences, review articles, book chapters, leadership in international research networks, organization of international reference conferences, participation in international bodies.
[2]Relevance to the state of the art, local, national and/or international positioning, progress and development of the project with the ability to learn where necessary, thematic mobility and/or interdisciplinary openness.
[3]Impact of the most significant contributions in relation to the state of the art.
[4]Type of availability (open archives, databases, etc.), type of presentations (oral communications, posters, etc.), importance of the conference in the field of expertise for the most significant presentations.
[5]Relevance of collaborations for the project, management of collaboration over time (formalisation, co-supervision, cross-visits, etc.), quality of the results of collaborations.
[6]Nature, impact and volume of training activities. Role in the organisation.
[7]Description des activités (participation, expertise, animation, direction, pilotage, etc.) et de la manière dont elles sont exercées, volume et niveau de complexité des activités les plus importantes, capacité à se former pour ces activités, impact de ces actions.

Specific Criteria for Access to the Following Grades

Recruitment Competition for the Position of CRCN (Chargé de Recherche Classe Normale – Junior Researcher, Normal Class)

The essential point concerns the evaluation of the candidates' ability to project themselves in the long term in the profession of CNRS researcher. They must describe how their scientific activity (relative to the duration of professional activity) and the relevance of the proposed project will enable them to integrate sustainably into a laboratory. The candidate must highlight:

- Their ability to **define a personal research project** and to **carry it out autonomously**.
- The relevance of the **research project** in the short and medium term, in relation to the research context and the themes of Section 11, and in coherence with their training and the host laboratory(ies).
- The coherence of their **training and research experience**, emphasizing any thematic, national, or international mobility, and specifying their personal contribution to the results obtained.

Recruitment Competition for the Position of DR2 (Directeur/Directrice de Recherche 2ème classe – Senior Researcher, 2nd Class)

The requirements for a DR2 application primarily concern the **originality, maturity, and influence** of the researcher in their field. The candidate must demonstrate their ability to drive a **collective research dynamic**, particularly by supporting less experienced researchers. The proposed research project must be **ambitious and original**[8] and coherent with the researcher's career. As with CRCN, the evaluation of dossiers will consider the context (scientific, material, human) and the opportunities available. It is not necessary to meet all the criteria listed below, but to present all activities in their context and highlight an overall dynamic. It may be useful to provide elements to evaluate the following indicators:

- **Scientific expertise.**
- **Influence** (national or international), personal or collective.[9]
- Ability to **design and lead projects**.[10]
- Investment in the **transmission** (to the laboratory, to the community, etc.) of **scientific and/or technical knowledge** derived from expertise and the ability to evolve it if necessary.[11]
- Ability to support young researchers.
- Ability to define a **strategic scientific vision** for their disciplinary field with an **original dimension** in the national and international context.
- Involvement in **general interest responsibilities**.[12]

[8]Ability to explain the significance of the challenges chosen (scientific, societal) and how they relate to the project.

[9]Impact of the most significant contributions, distinctions obtained or invitations received on a personal basis or by colleagues or supervisees, organization of or participation in the scientific committee of recognized scientific events in the field, involvement in a national or international learned society, editorial activity, construction and/or coordination of an international network of collaborations.

[10]Funded projects, establishment of collaborative networks (sustainability, impact of results), industrial contracts.

[11]Description of actions and how knowledge is transferred, developments generated.

[12]Team leadership, administrative responsibilities, active participation in research evaluation or management committees, leadership of collective projects, etc. Description of role in the context, scope and impact of actions, level of responsibility, promotion of collective work, ability to foster the progress of those supervised.

Recruitment Competition for the Position of DR1 (Directeur/Directrice de Recherche 1ère classe – Senior Researcher, 1st Class)

Candidates for the DR1 grade must demonstrate their potential or proven ability to drive a collective dynamic by proposing a **prospective, creative, and innovative vision of their research field**, which would contribute to the laboratory project and more broadly benefit the entire scientific community.[13]

2. Periodic Evaluation of Researchers

The criteria below will be used to evaluate contributions made during the evaluation period, at 30 months ("mid-term") and 60 months ("full-term"). For the mid-term evaluation, the presentation of the scientific project is not required. The report is also an opportunity to explain any difficulties encountered or any element that has affected the researcher's activity.

Common Criteria for Evaluations and Promotions

- Quality of **scientific activity** and (for full-term evaluation) **scientific project**: approach, originality, evolution.[2]
- Quality of **scientific output** (publications in peer-reviewed journals, patents, book chapters, monographs, software and libraries, data, etc.), **clarifying the role** of the researcher.[3]
- **Integration into the laboratory and contribution to the development of the laboratory project**.[14]
- Quality of **dissemination activities** to the scientific community (provision of research data, open-source software/libraries, open hardware, participation in conferences, congresses, or seminars, efforts in open science, etc.)[4]
- **Valorization and contracts, links with socio-economic actors**.[15]
- Quality of **collaborations** (internal, local, national, international).[5]
- Quality of **supervision** (students, non-permanent staff, project teams, permanent staff, etc.)[16]
- **Involvement in teaching, research training, knowledge transfer, organization of colloquia or thematic schools, dissemination of ethical practices, scientific culture, and other outreach activities to society**.[6]
- Investment in **collective interest tasks**,[7] including participation in the activities of the scientific community in the broadest sense.

[13]Description of their role in the context, scope and impact of their action, ability to link their activity to the needs of their structure and to mobilize available instruments, management functions, achievement of good governance.
[14]The researcher's involvement in the research dynamics of the team and the laboratory, positioning of the research topic pursued by the researcher within the laboratory's themes.
[15]Project writing (selected for funding or, in the event of funding difficulties, nevertheless opening up enriching collaborations for the scientific project), ability to seek relevant funding, role and position in partnerships, description of actions to promote research results, if applicable.
[16]Description of duties and how they are performed, efforts made to promote the advancement of those supervised and to ensure respect for individuals and scientific integrity, efforts made to improve one's own practices (recruitment methods, supervision, monitoring, etc.), involvement in monitoring the future of temporary and permanent staff.

Specific Criteria by Grade

Grade CRCN (CR Classe Normale – Junior Researcher, Normal Class)
Common criteria listed above.

Grade DR2 (DR 2ème classe – Senior Researcher, 2nd Class)
In addition to the common criteria listed above, the following criteria apply:
- **Scientific expertise.**
- Involvement and/or responsibility in **collective research projects.**
- Investment in the **transmission** (to the laboratory, to the community, etc.) of **scientific and/or technical knowledge** derived from expertise and the ability to evolve it if necessary. [11]

Grade DR2 (DR 2ème classe – Senior Researcher, 2nd Class)
For DRs, involvement in supporting less experienced researchers is expected, with the primacy of scientific contributions remaining. In addition to the common criteria listed above, the following criteria apply:
- **Scientific expertise.**
- **Influence (national or international), personal or collective**.[9]
- Ability to **design and lead projects**.[10]
- Investment in the **transmission** (to the laboratory, to the community, etc.) of **scientific and/or technical knowledge** derived from expertise and the ability to evolve it if necessary.[11]
- Ability to support young researchers.
- Quality in the **exercise of scientific leadership.**
- **Involvement in general interest responsibilities**.[12]

Grade DR1 (DR 1ère classe – Senior Researcher, 1st Class)
In addition to the common criteria and the specific criteria for the DR2 grade listed above, the following criterion applies:
- Ability to **drive a collective dynamic** by proposing a prospective, creative, and innovative vision of their research field and/or their work environment.[13]

Grade DRCE (DR Classe Exceptionnelle – Senior Researcher, Exceptional Class)
In addition to the common criteria and the specific criteria for the DR2 and DR1 grades listed above, the following criteria apply:
- Major breakthrough, exceptional **impact** in a scientific field.[17]
- **Exceptional recognition, personal or collective**.[18]
- Leading role in **structuring research**.[19]

[17]Ability to create a school of thought, vision, and groundbreaking scientific trajectory.
[18]Prestigious awards, long-term invitations, or plenary lectures at major conferences in the discipline, obtained or honored personally, by collaborators, or by supervised individuals.
[19]Description of the role and impact (in national and international policy-making bodies, advisory boards, steering committees, structured participation in the activities of learned societies, etc.).

3. Grade Promotion of Researchers

The evaluation criteria specific to the grade to which the researcher belongs will be used to evaluate contributions since the last promotion.
The potential or already demonstrated ability to meet a substantial part of the evaluation criteria for the grade to which the researcher is applying will also be taken into account.
As explained above, it is not necessary to meet all of these criteria. The dynamics of the career path and the human aspects related to motivation will be considered in the evaluation.

4. Request or Renewal of Emeritus Status

Requests for emeritus status or renewal of emeritus status will be examined in accordance with Circular « CIR220110DRH du 5 mai 2022 modifiée le 23 août 2023 ». The following criteria will be considered:

- Investment to **benefit the laboratory and the host team** with their network, new collaborations, and the transmission of knowledge and skills.
- Integration of the project and scientific activity into the **collective strategy** of the laboratory and the host team.
- Quality of **scientific activity**.