Differentiated analysis of the HRS4R consultation of 2025

Comparison between R1–R2 and R3–R4 researchers based on Google Forms responses

ICECHIM | N = 63 respondents

1. Purpose and methodology

The analysis uses the existing responses to the HRS4R questionnaire and differentiates researchers' views and needs across two aggregated career-stage categories. The proposed grouping is: R1–R2 = Assistant Researchers (ACS), Research Scientists (CS) and Research Scientists Grade III (CS III); R3–R4 = Research Scientists Grade II (CS II) and Grade I (CS I). This approach makes use of the scientific-grade variable collected through Google Forms, preserves anonymity and provides sufficient group sizes for comparison.

Group	Scientific grades included	N	%
R1–R2	ACS, CS, CS III	39	61.9%
R3–R4	CS II, CS I	24	38.1%

For ordinal questions, responses were coded on a 1–5 scale, where 5 represents the most favourable perception. The mean, median and proportion of positive responses (categories 4–5) were calculated. Differences between groups were explored using the Mann–Whitney U test. To limit false-positive interpretation resulting from multiple testing, p-values were adjusted using the Benjamini–Hochberg procedure. Multiple-response questions were compared using Fisher's exact test. The analysis is exploratory and should be used to prioritise actions, not to assess individual staff members.

2. Executive summary

- Assessments are generally favourable in both groups, with most mean scores ranging from 3.7 to 4.8 out of 5.
- R3–R4 provide more favourable assessments than R1–R2 in almost all areas. This pattern suggests that institutional experience and professional position influence perceptions of access to opportunities and how processes function.
- The clearest difference concerns freedom to choose research topics: mean 3.74 for R1–R2 versus 4.46 for R3–R4; 56.4% versus 91.7% positive responses. This is the only difference that remains statistically significant after correction for multiple testing.
- Important descriptive differences favouring R3–R4 also appear for OTM-R recruitment, career advancement, management, employment stability, mobility and support provided to R1–R2.
- Limited access to funding is the dominant barrier for both groups: 89.7% of R1–R2 and 87.5% of R3–R4.
- The need for FAIR awareness is high in both groups: 74.4% for R1–R2 and 66.7% for R3–R4. R3–R4 somewhat more frequently indicate a need for research-ethics training, while R1–R2 more frequently mention more effective mechanisms for reporting misconduct.
- The results support proportionate actions targeted primarily at R1–R2: access to information and opportunities, annual career discussions, more structured mentoring, transparency regarding recruitment/advancement, and support for developing scientific autonomy.

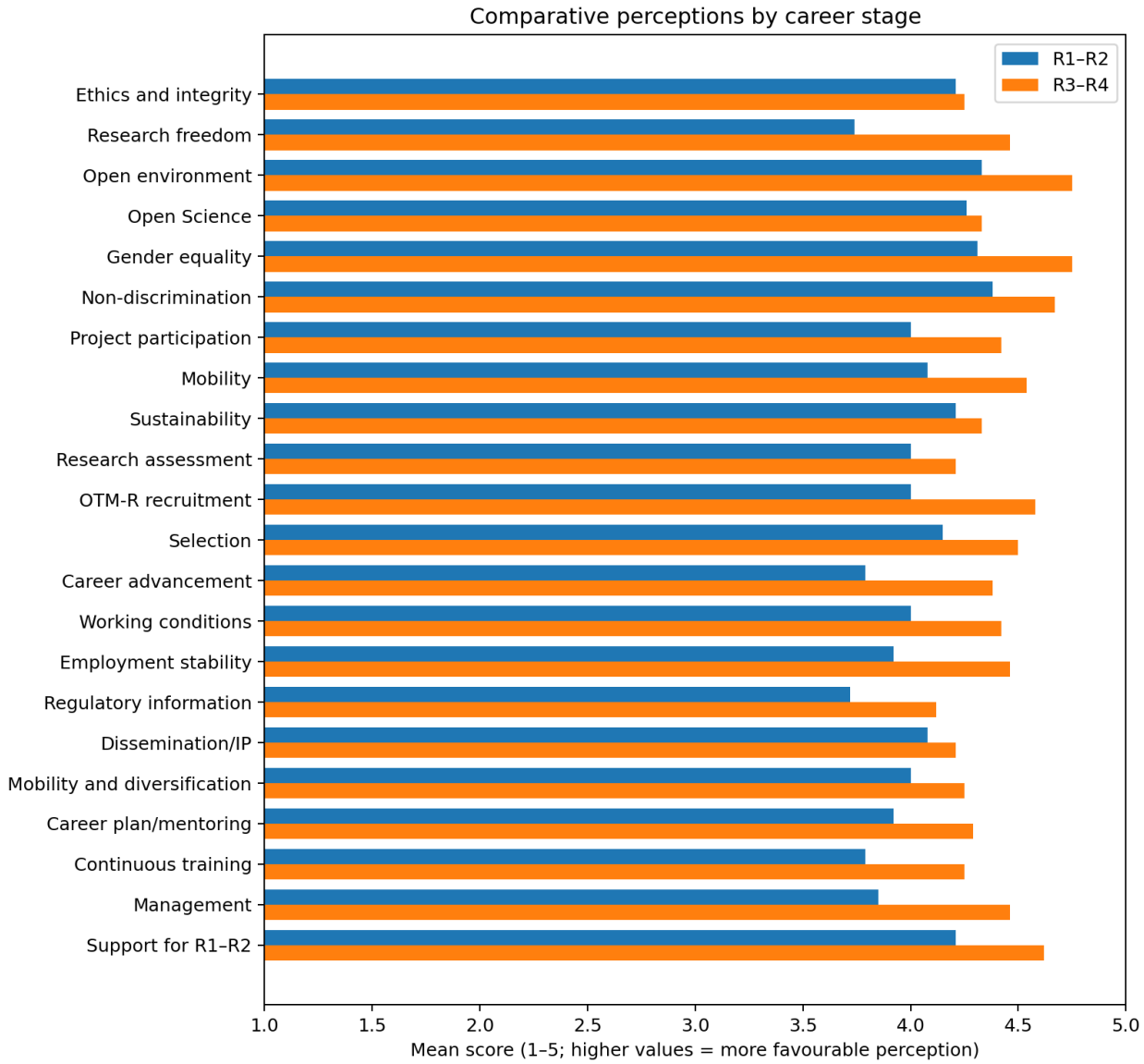


Figure 1. Mean scores on a 1–5 scale. Higher values indicate more favourable perceptions.

3. Comparative results for ordinal questions

Topic	Mean R1–R2	Mean R3–R4	Positive R1–R2	Positive R3–R4	p	p BH	Interpretation
Ethics and integrity	4.21	4.25	84.6%	87.5%	0.890	0.932	No statistical difference
Research freedom	3.74	4.46	56.4%	91.7%	0.001	0.032	Significant after BH
Open environment	4.33	4.75	87.2%	95.8%	0.042	0.114	Descriptive difference; raw p <0.05
Open Science	4.26	4.33	82.1%	91.7%	0.969	0.969	No statistical difference
Gender equality	4.31	4.75	87.2%	100.0%	0.061	0.149	No statistical difference
Non-discrimination	4.38	4.67	87.2%	91.7%	0.205	0.282	No statistical difference
Project participation	4.00	4.42	71.8%	79.2%	0.155	0.233	No statistical difference
Mobility	4.08	4.54	76.9%	87.5%	0.038	0.114	Descriptive difference; raw p <0.05
Sustainability	4.21	4.33	84.6%	83.3%	0.465	0.538	No statistical difference
Research assessment	4.00	4.21	71.8%	75.0%	0.388	0.474	No statistical difference
OTM-R recruitment	4.00	4.58	74.4%	91.7%	0.029	0.114	Descriptive difference; raw p <0.05
Selection	4.15	4.50	79.5%	79.2%	0.093	0.206	No statistical difference
Career advancement	3.79	4.38	66.7%	83.3%	0.039	0.114	Descriptive difference; raw p <0.05
Working conditions	4.00	4.42	71.8%	87.5%	0.159	0.233	No statistical difference

Topic	Mean R1–R2	Mean R3–R4	Positive R1–R2	Positive R3–R4	p	p BH	Interpretation
Employment stability	3.92	4.46	71.8%	79.2%	0.014	0.102	Descriptive difference; raw p <0.05
Regulatory information	3.72	4.12	66.7%	87.5%	0.106	0.211	No statistical difference
Dissemination/IP	4.08	4.21	79.5%	79.2%	0.727	0.800	No statistical difference
Mobility and diversification	4.00	4.25	71.8%	83.3%	0.345	0.446	No statistical difference
Career plan/mentoring	3.92	4.29	71.8%	79.2%	0.124	0.218	No statistical difference
Continuous training	3.79	4.25	66.7%	87.5%	0.129	0.218	No statistical difference
Management	3.85	4.46	64.1%	91.7%	0.025	0.114	Descriptive difference; raw p <0.05
Support for R1–R2	4.21	4.62	82.1%	95.8%	0.009	0.102	Descriptive difference; raw p <0.05

The main interpretation should not be reduced to statistical significance. The sample is sufficient for useful descriptive analyses, but relatively small for detecting moderate differences. Therefore, consistent differences of 0.4–0.6 points and large contrasts in the proportion of positive responses are relevant for action design, even if not all remain significant after multiple-testing adjustment.

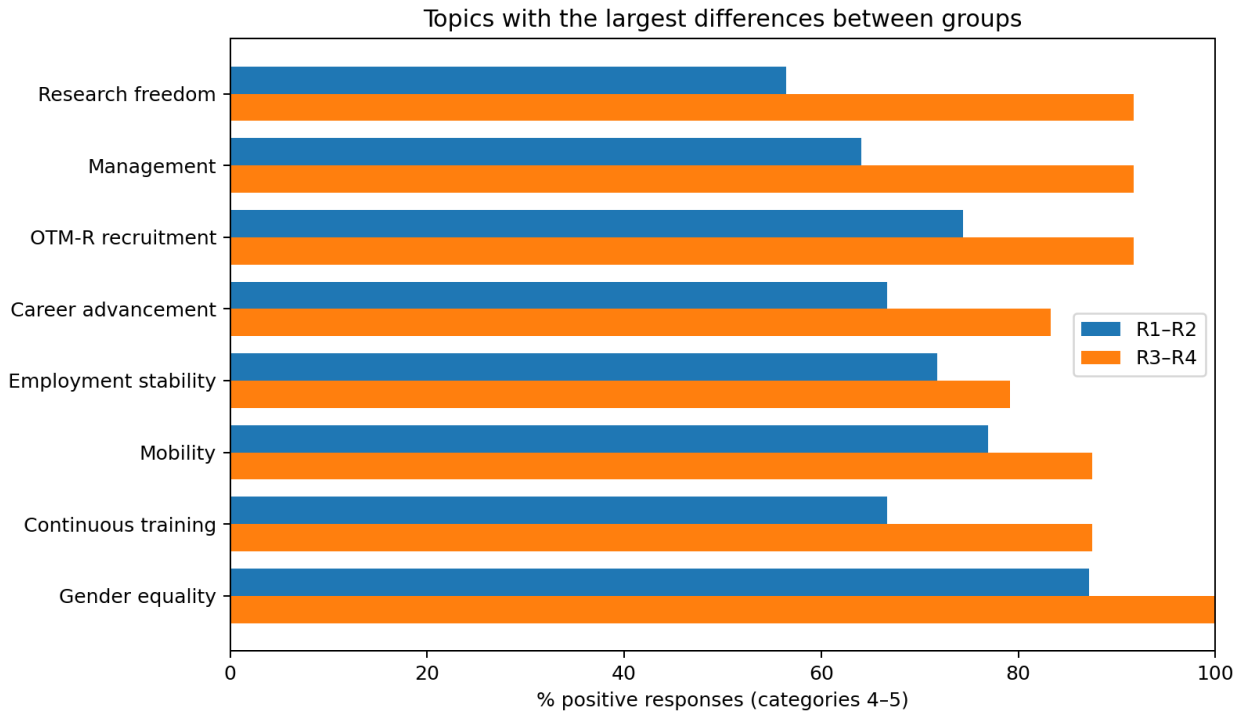


Figure 2. Proportion of positive responses for topics with the largest descriptive differences.

4. Analysis by HRS4R area

4.1 Ethics, integrity and Open Science

Perceptions of ethical compliance are almost identical: 4.21 for R1–R2 and 4.25 for R3–R4. This result supports the existence of a solid institutional basis.

Support for Open Science is rated favourably by both groups: 4.26 and 4.33. However, responses to the question on improvement measures show a clear need to operationalise FAIR principles.

Implication for HRS4R: maintain the existing framework, complemented by a short FAIR guide, one joint annual session and clear information on confidential reporting of misconduct. Creating a separate administrative programme is not justified.

4.2 Research freedom and an open environment

R1–R2 rate freedom to choose research topics significantly less favourably than R3–R4: 3.74 versus 4.46. Only 56.4% of R1–R2 select the positive categories, compared with 91.7% of R3–R4.

The institutional environment is perceived as open by both groups, but R1–R2 are more reserved: 4.33 versus 4.75.

Implication for HRS4R: the GAP Analysis should distinguish between formal freedom and the effective capacity to initiate one's own research topics. R1–R2 should receive clearer information on calls, be involved in idea generation and have periodic discussions with group leaders, without introducing new committees.

4.3 Gender equality, non-discrimination and participation

Gender equality is rated very favourably, although R3–R4 give higher scores: 4.75 versus 4.31.

Efforts to combat discrimination are rated favourably: 4.38 for R1–R2 and 4.67 for R3–R4.

Participation of researchers at all levels in project design receives 4.00 for R1–R2 and 4.42 for R3–R4.

Implication for HRS4R: the equality framework can be considered a strength, but the plan should include a simple measure for earlier involvement of R1–R2 in idea development and a short bias-awareness module integrated into OTM-R training.

4.4 Mobility, sustainability and research assessment

Mobility is rated 4.08 by R1–R2 and 4.54 by R3–R4. The difference suggests lower access or visibility for younger researchers.

Sustainability receives similar ratings: 4.21 and 4.33, with no relevant difference.

Research assessment receives 4.00 and 4.21. There is general support, although some respondents do not consider all dimensions of activity to be fully integrated.

Implication for HRS4R: mobility information should be communicated specifically to R1–R2. For sustainability, a one-page checklist and piloting in a few projects are sufficient; a complex evaluation mechanism is unnecessary.

4.5 Recruitment, selection and career advancement

OTM-R recruitment procedures are rated 4.00 by R1–R2 and 4.58 by R3–R4. The proportion of positive responses is 74.4% versus 91.7%.

The clarity of criteria and professionalism of selection committees are rated favourably: 4.15 and 4.50.

Career advancement is one of the topics viewed more cautiously by R1–R2: 3.79 versus 4.38; only 66.7% positive responses among R1–R2.

Implication for HRS4R: the OTM-R policy should be public and bilingual, while recruitment and promotion criteria should be communicated in a simple format. A "How recruitment and promotion work" webpage would be useful, rather than an additional extensive procedure.

4.6 Working conditions, stability and information

Working conditions are rated 4.00 by R1–R2 and 4.42 by R3–R4.

Employment stability and career development: 3.92 versus 4.46. R1–R2 show a higher proportion of neutral or negative responses.

Information on regulations, IP, data security and cybersecurity receives one of the lowest scores among R1–R2: 3.72, compared with 4.12.

Implication for HRS4R: an annual information package for R1–R2 and onboarding for new staff are recommended, bringing together essential regulations, IP, data protection and cybersecurity.

4.7 Dissemination, career, training and mentoring

Support for dissemination and IP is rated similarly: 4.08 and 4.21.

Mobility and career diversification: 4.00 and 4.25.

Career plan and mentoring: 3.92 and 4.29.

Continuous training: 3.79 for R1–R2 and 4.25 for R3–R4.

Support provided to R1–R2 is rated 4.21 by R1–R2 themselves, but 4.62 by R3–R4. The difference indicates a possible gap between support provided and support perceived by beneficiaries.

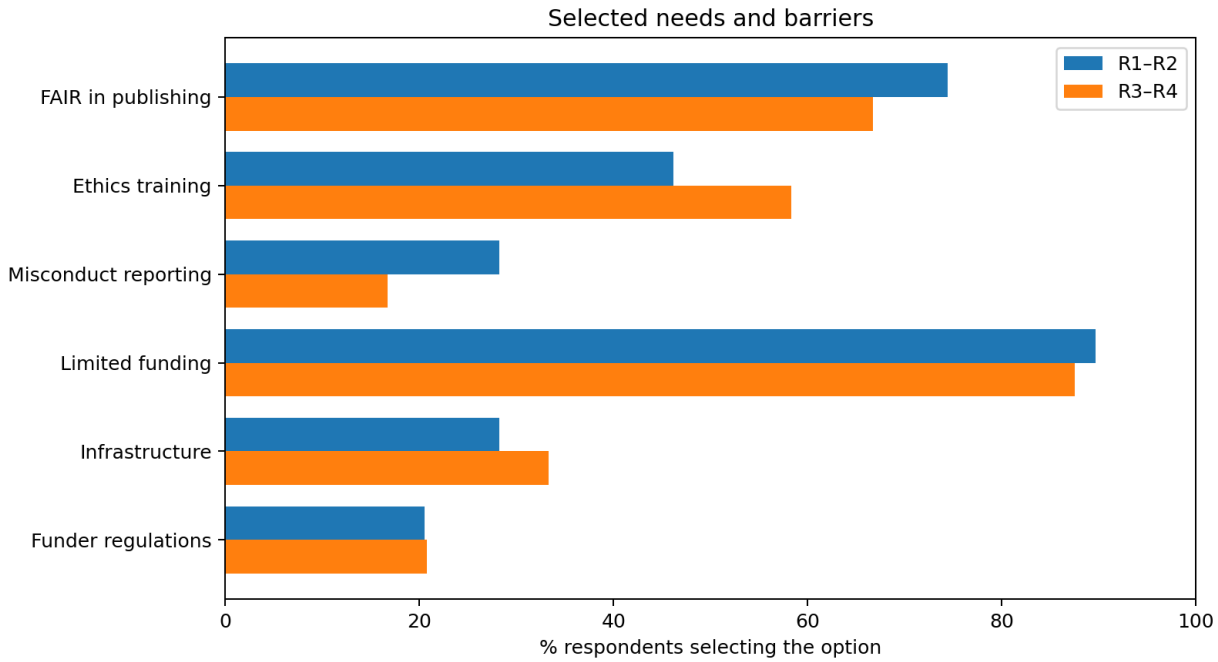
Implication for HRS4R: a simple model is recommended: a 30–60 minute annual career discussion, a template of no more than two pages, and identification of a mentor for new R1 researchers. Frequent reporting or a complex formal system is unnecessary.

4.8 Team management

Management quality and fairness are rated 3.85 by R1–R2 and 4.46 by R3–R4. Only 64.1% of R1–R2 select the positive categories, compared with 91.7% of R3–R4.

Implication for HRS4R: the result should be treated as a difference in perception, not as a negative assessment of managers. It can be addressed by clarifying expectations, annual feedback and a short module for group leaders on mentoring and communication.

5. Multiple-response questions and ethics-related situations



Area	Option	R1–R2	R3–R4	Fisher p
Ethics and integrity	Awareness of the need to comply with FAIR (Findable, Accessible, Interoperable and Reusable) principles when publishing results	74.4%	66.7%	0.573
Ethics and integrity	Improving training in research ethics	46.2%	58.3%	0.439
Ethics and integrity	Introducing more effective mechanisms for reporting misconduct	28.2%	16.7%	0.371
Barriers to research freedom	Limited access to funding	89.7%	87.5%	1.000
Barriers to research freedom	Legal, administrative and ethical regulations imposed by funders	20.5%	20.8%	1.000
Barriers to research freedom	Lack of the infrastructure needed for research	28.2%	33.3%	0.779
Barriers to research freedom	I do not encounter significant barriers	7.7%	8.3%	1.000

There are no significant differences between the groups for the multiple-response options. This indicates common priorities: funding is the central barrier, FAIR is the most frequently identified integrity-related need, and training and reporting mechanisms remain relevant to both categories.

Response regarding compromised research ethics	R1–R2 N	R1–R2 %	R3–R4 N	R3–R4 %
Yes, but adequate measures were not taken	5	12.8%	1	4.2%
Yes, and effective corrective measures were implemented	1	2.6%	4	16.7%
I have not encountered such situations	27	69.2%	17	70.8%
I prefer not to answer	6	15.4%	2	8.3%

The distribution of responses to the question on situations in which research ethics were compromised does not differ significantly between groups ($\chi^2 = 5.48$, $p = 0.140$). However, the existence of responses indicating situations without adequate measures justifies maintaining an action on awareness of reporting channels and resolution mechanisms.

6. Open-ended suggestions

- Continuous professional training through access to funding that would make this possible.
- Scientific research needs financial stability and predictability. Young researchers have been lost because of underfunding.
- Professional development, courses, implementation of new software (AI).

The open-ended responses are few, but converge on three themes: access to funding for continuous training, financial stability and predictability, and professional development, including digital/AI skills. Because of the small number, they should be used as qualitative illustrations rather than prevalence estimates.

7. Conclusions for HRS4R documentation

7.1 Process Description

The 2025 HRS4R consultation included the respondents' scientific grade. For analytical purposes, the responses were reanalysed by two aggregated career-stage groups: R1–R2, including Assistant Researchers (ACS), Research Scientists (CS) and Research Scientists Grade III (CS III), and R3–R4, including Research Scientists Grade II (CS II) and Grade I (CS I). The aggregation preserved anonymity and provided sufficient group sizes for identifying differentiated views and needs.

7.2 Views and Needs

R1–R2 researchers generally assessed ICECHIM practices positively, but reported less favourable perceptions than R3–R4 regarding freedom to choose research topics, recruitment and career advancement, employment stability, access to information, continuous training, team management and the structure of mentoring support. Their needs therefore focus on practical access to opportunities, transparent career information, structured but proportionate mentoring and greater involvement in the development of research ideas. R3–R4 researchers reported consistently more favourable perceptions and identified a need for continued ethics training and institutional tools that support their mentoring and leadership roles.

7.3 GAP Analysis

Although the institutional framework is generally perceived positively, the differentiated analysis reveals that formal availability of procedures and opportunities does not always translate into the same level of access or awareness across career stages. The main career-stage gap concerns R1–R2 researchers, particularly their perceived autonomy in selecting research topics and their access to career information, mentoring, training and transparent advancement pathways.

8. Recommended actions proportionate to ICECHIM's size

ID	Action	Measure	Indicator	Low administrative burden
A1	R1–R2 autonomy and involvement	Six-monthly or annual group-level discussion on ideas, calls and the possibility of initiating research topics	% of R1–R2 reporting improved access to opportunities; annual monitoring	No new structure
A2	Career discussion and mentoring	Template of maximum 2 pages; annual discussion; mentor identified for new R1 researchers	At least 70% of participants consider the discussion useful	Pilot in 2–3 groups
A3	Integrated information	One annual/onboarding session on regulations, IP, FAIR, data and cybersecurity	Minimum 20% pre/post increase; satisfaction ≥80%	One annual module
A4	OTM-R and career advancement	Public bilingual policy and simple webpage explaining criteria and stages	% bilingual/EURAXESS vacancies; candidate feedback	Uses existing procedures
A5	Management and mentoring	Short module for group leaders on feedback, expectations and mentoring	Leader participation; R1–R2 feedback at annual assessment	30–60 minutes, integrated into a meeting
A6	Monitoring	One-page sheet per action, reviewed every 6 months; full survey annually/interim	Two reviews/year; annual public report	One consolidated Excel dashboard

9. Limitations

- The sample includes 63 respondents and reflects perceptions, not direct verification of the application of procedures.

- The R1–R2 and R3–R4 grouping is analytical and based on scientific grade; it does not replace individual assessment of the EURAXESS profile.
- Some response categories have low frequencies, which reduces statistical power.
- Numerous questions were analysed; therefore, the main interpretation also uses the Benjamini–Hochberg adjustment.
- Descriptive differences are useful for planning, but should not be presented as conflicts between groups or demonstrated deficiencies.

10. Conclusion

The differentiated analysis confirms an overall positive perception of the ICECHIM environment, while highlighting a less favourable experience among R1–R2 in areas that depend on effective access to autonomy, information, visibility and career support. This result provides a solid basis for complementing the GAP Analysis and Action Plan with targeted but easy-to-administer measures. Six-monthly implementation monitoring and every two years assessment of perceptions are considered sufficient and proportionate to the size of the institute.