CSIR-NIScPR Policy Bulletin/January-2022/02

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR)

Assessment of the Impact Created by CSIR-RRF Programme

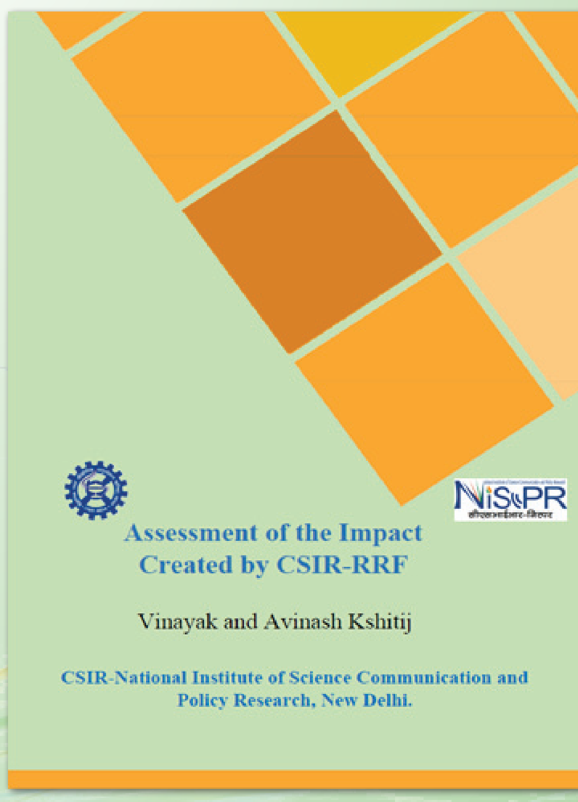
Council of Scientific and Industrial Research (CSIR), India, has been involved in numerous fellowship programmes to promote science and technology studies nationwide as well as across the globe. The International Science & Technology Affairs Directorate (ISTAD), a unit of CSIR, plays a key role in identifying and nurturing CSIR's global partnerships in the leading areas of research and development, and to foster collaborative and contract research in the frontier area of Science and technology (S&T). CSIR provides CSIR-Raman Research Fellowship (CSIR-RRF) to young and bright scientists from CSIR. This programme provides an opportunity for CSIR scientists to carry out research in the emerging or high priority technology areas to enhance their R&D skills and capability. CSIR-RRF is tenable at foreign institutions or R&D Centers of Excellence for 2 to 6 months. With this background CSIR-RRF programme has been studied to assess the impact it has created in various dimensions. This study assesses impact of the programme in several dimensions, such as Academic development, Career development, Expectations and Goal attainment, Participation in Industrial research, Personal aspects, and also assess contributions made by the awardees to scientific community, industry, Government organizations and society via research publications, popular articles, patents and scientific consultations etc. This study is mainly based on analysis of the primary data collected from the responses against the questionnaires distributed amongst the awardees.

Major Highlights

- CSIR-RRF programme has created significant impact on various domains and it has been largely successful in achieving its objectives over the years.

- It is revealed that the awardees are still connected with their hosts of foreign institutes majorly via Joint Publications.

- CSIR-RRF experience has been found to be extremely useful in nurturing awardee's potential in various academic roles and programme has created substantial impact on awardees' career prospective, expectations and goal attainment etc.These impacts are imperative as these further translate to institute development, R&D, industry, and society.



Responses from Awardees

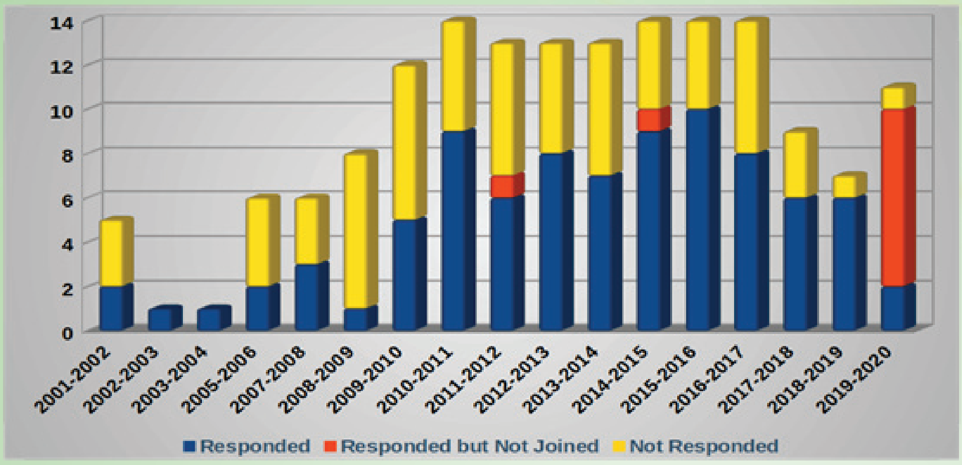


Figure 1. Illustration of year-wise number of awardees and the responses collected against the questionnaire circulated among the awardees

To support this study CSIR-ISTAD has provided a list of awardees, including their contacts, to CSIR-NIScPR (erstwhile CSIR-NISTADS). As per the provided list, CSIR-RRF has been awarded to 161 scientists from CSIR laboratories since 2001. Some details of the responses collected for this study are illustrated in Figure 1. Responses have been collected against ta questionnaire developed for this study.

Distribution of Associated Foreign Institutions

CSIR-RRF programme was carried out in different institutions of 21 host countries across the globe with a dominance coming from of institutes from USA and European countries. This is illustrated in Figure 2. The fellowship was granted largely in Engineer Sciences, Chemical Sciences, Earth Sciences, and Biological Systems & Organism.

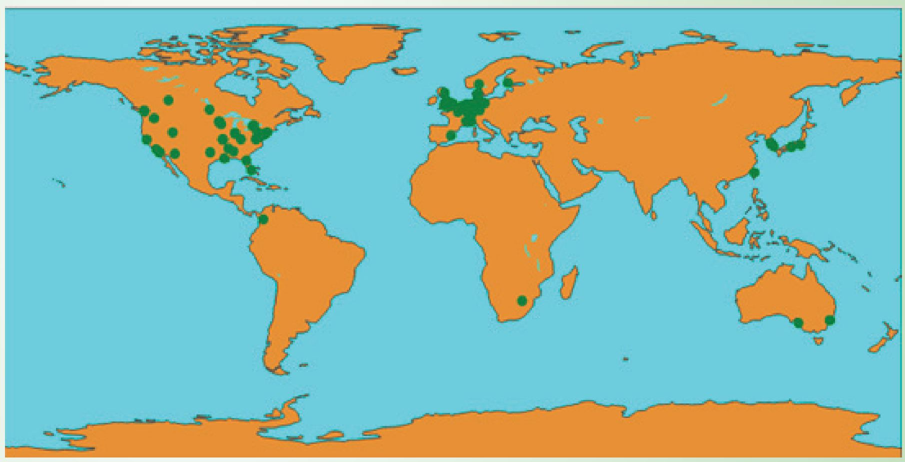


Figure 2. Geographical distribution of institutes where CSIR-RRF was carried out.

Career Growth and Kinematics

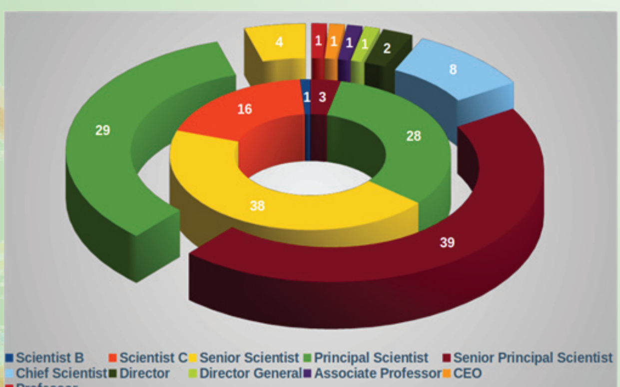


Figure 3. Designations of the respondents at the time of their selection (inner-ring) and at the time of survey (outer ring).

The respondents were mostly the entry level scientist when selected for this programme. Moreover, gender participation turned out to be away from the uniformity. At present, designations of 60% of the respondents have been reported at and above the level of Senior Principal Scientist (Figure 3). This figure may be seen along with year-wise responses which reveals that nearly 80% respondents have joined the programme after FY 2009-2010. This is indicative of consistent career growth of the CSIR-RRF awardees over the years. Finally, as learned from the analysis of career kinematics, respondents rarely moved out of the CSIR before their superannuation.

Impact on Expectations and Goal Attainment

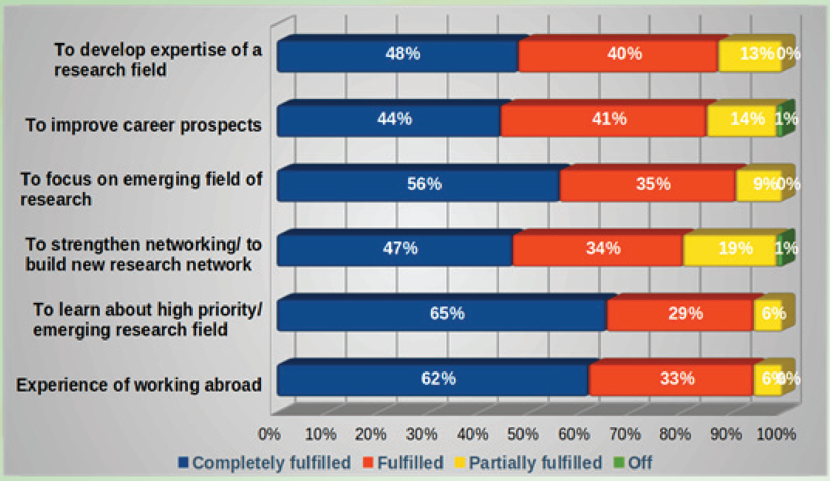


Figure 4. Illustration of results obtained for expectation matrix to gauge expectations of the RRF awardees along different parameters.

The study suggests that CSIR-RRF programme has been able to fulfil expectations of the respondents with respect to various parameters, such as *learning about high priority or emerging research filed* which is one of the key objective of this programme (Figure 4). Besides, RRF has been found highly conducive forawardees to achieve their present designation.

Impact on Career Development Pathway

Impact of RRF has been Substantial in different roles such as head of department or institute. It is also observed that RRF awardees have contributed in the industrial research front via filing patents, technology licensing and technology transfer to the industry. Besides, more than 75% of respondents were engaged in scientific consultancies to the industries at least for once. Nearly the same figure was observed for the consultancies offered to Government organizations. The analysis also indicates that some consultancies have been offered to NGOs or to others scientific entities (Figure 5).

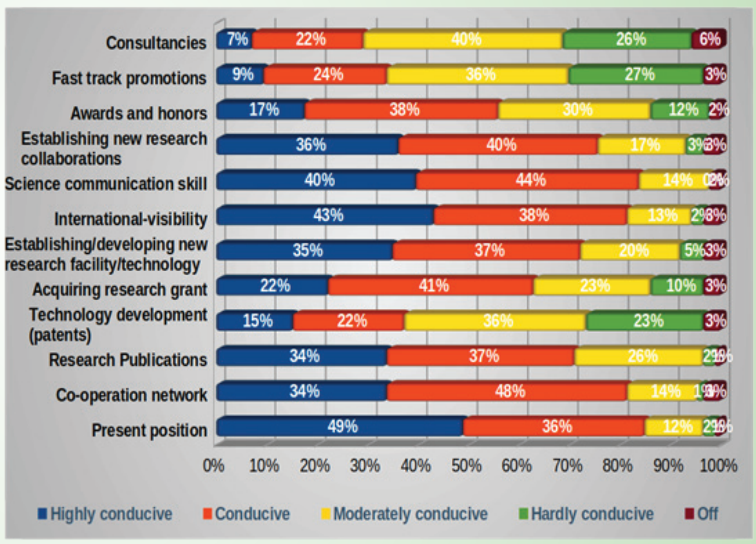


Figure 5. Impact of RRF on various dimensions of career development pathways.

Impact on Academic Development

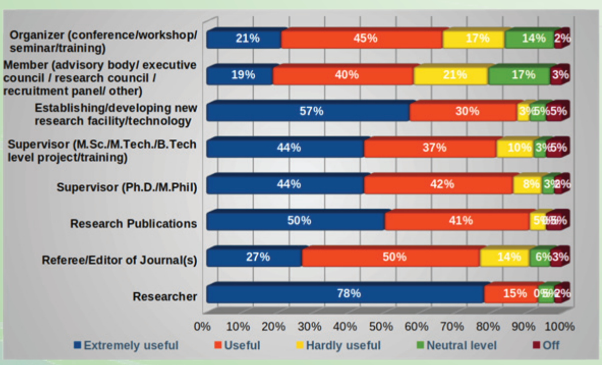


Figure 6. Impact of RRF on various dimensions of academic development

CSIR-RRF experience has been extremely useful in nurturing awardee's potential as a researcher. It is also observed that RRF experience has been extremely useful in publishing research articles, in supervising students at different levels and also for nurturing respondent's potential in different academic roles (Figure 6). Majority of RRF respondents have been publishing annually 3 research papers on average in SCI journals.

Discussion for Policy Suggestions

CSIR-RRF fellowship programmes can develop a pool and build a capacity of highly skilled professionals who may create a strong networks of knowledge exchange and work on the problems of mutual interests. For developing nations, capacity building in the area of emerging and high priority technologies remains as a challenge. Therefore, efficient policy measures are sought for to address S&T development challenges through collaborations and mobility of scholars among the participating countries. Fortunately in the present time, the networking among the scholars may well be set up via listserv and social media outlets. Incorporating some considerations raised by the respondents in the survey CSIR may wish to take up some policy measures for the improvement in efficacy of the programme.

Policy Recommendation

- Incentive mechanism is needed to be introduced to encourage women participants.
- Some annual activities may be included, such as
    - orientation programme for the new fellows
    - Feedback survey and exit interview of the fellows
- Presence of an office, staffed by permanent employees, may provide an excellent mechanism to facilitate an open line of communication with the scholars.
- An advisory committee may be established for mentoring and reviewing and providing inputs to the fellows.

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