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# ASSESSMENT OF GOVERNMENT OF INDIA'S GENDER MAINSTREAMING PROGRAMS FOR WOMEN IN SCIENCE

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## EASTERN REGION
### ODISHA & WEST BENGAL

**SUBMITTED BY:**
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Regional Principal Investigator

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# Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

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[Eastern Region- Odisha&West Bengal]


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**About NSTMIS:**
The National Science and Technology Management Information System (NSTMIS), a division of Department of Science and Technology (DST) has been entrusted with the task of building the information base on a continuous basis on resources devoted to scientific and technological activities for policy planning in the country.

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**DISCLAIMER**
Every care has been taken to provide the authenticated information. However, the onus of authenticity of data rests with the PI of the project.

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# Preface

The importance of mainstreaming gender in all walks of life cannot be over-emphasized. This is not just to make sure that women get a chance to give expression to their creativity and abilities but also because it is essential for the balanced development of any society. In fact, when considering women in science, it is even truer: research is a highly creative and individualistic activity and each person makes his/her unique contribution. The process of scientific development, innovation and discovery can only benefit from diversity, gender being just one component. Also given the fact that women are 50% of humanity, their intellectual potential is something that we can ill afford to ignore.

Nationally, there is no clear picture of women scientists engaged in science. A project was launched by DST, GOI to assess gender mainstreaming programmes for women in science. Sophitorium have been entrusted as the regional coordinator for Eastern India States Odisha and West Bengal in this National Programme. The objective of the project is to know the impact of gender mainstreaming policy of Government of India on improvement status of women scientists in Odisha and West Bengal. In addition, the collected data is enriched to the National Database to have cleared picture of women engaged in science.

There are several issues that women scientists face that stem from innate prejudice and bias, as well as patriarchal attitudes in the workplace. In addition, there is widespread gender insensitivity as well as explicit sexual harassment.In the Indian context even the sensitized mainly look for providing pathways for women to return to science after a break, more or less presupposing that a break for family reasons is essential. What most women scientists want are measures which will help them negotiate this period without losing contact with cutting edge research. Indeed, women would prefer a workplace that offers enough facilities that make it unnecessary to take a career break in the first place.

The project team may attend some of the above issues and findings which help WOS to promote scientific research in India.

## Acknowledgments

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- **Dr. A. Ratnakar**
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- **Dr. H. B. Singh**, DST, New Delhi

## Abstract

Nationally, there is no clear picture of women scientists engaged in science. A project was launched by DST, GOI to assess gender mainstreaming programmes for women in science. Sophitorium have been entrusted as the regional coordinator for Eastern India States Odisha and West Bengal in this National Programme. The objective of the project is to know the impact of gender mainstreaming policy of Government of India on improvement statusof women scientists in Odisha and West Bengal. In addition, the collected data is enriched to the National Database to have cleared picture of women engaged in science. A workshop was organized in Bhubaneswar to promote the objectives of the project. About 41 women scientists had participated in the programme. It was noticed that there are many of them are engaged in different scientific institutions in and around Bhubaneswar. All of them are benefitted and contributed to the society through their research findings. The institution has formed a team to do survey in Odisha and West Bengal. Data has been collected from various institutions of Odisha and West Bengal. The questionnaire as designed for this purpose was field in by the individuals, through emails, and by post also. Sometimes, the same was collected telephonically. The team had faced various hurdles in collecting data mainly not responding to email, speed post or mobile. Their contact address is not updated after leaving the institutions. Many questionnaires are returned due to invalid address. Some cases, the guide and the corresponding institutions of the women scientists are more focused then the researchers and also standing as hurdles to assess. The team is also faced to do authentication due to blank fields, unproper data. It is also noticed and but collected some data by the selective planning and hard work. Finally, data as collected from the survey are uploaded in the central database in a geospatial record format with complete information of women of Odisha and West Bengal.

**Keywords:**Gender Mainstreaming Programme; Women in Science; Woman Scientist; Women Empowerment; Women Scientist of Odisha; Women Scientist of West Bengal; Filed Survey; Questionnaire Method.

## Executive Summary

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Since Odisha is now preferred as education and research hub in eastern India, there are many national importance institutions are started which preferred not only by the WOS of Odisha, but liked by the neighbouring states like Chatishgarh, Jharkhand, Bihar and West Bengal. The WOS from Nearth-East are also preferred to work in Odisha.

As expected, nearly 82% of WOS in Odisha are successful in both scientific research and their family responsivities to strengthening the society in Odisha. Scientific research is not so dearer to SC&ST communities and occupied only 3% in participation of this programme.

In the case of West Bengal, it is noticed that more than 84% of WOS are successful in both scientific research and their family responsibilities and noticed very poor participation of ST community (0.81%).

**IPR Issues** – WOS are unaware of different IPR issues for their publications, patents and technology aspects of the projects. Out of 41 samples studied during the workshop, it is noticed that WOS are the primary author only in 02 cases. DST instructions should available for the authorship pattern. IPR Awareness Programme may be arranged regularly to achieve the goal.

**Updating Database** - New project should be allotted to WOS after registration in the central database which should be mandatory for all WOS.

**Availability of Knowledge Base** - WOS need regular interactions through online. Hence, special knowledge base for their daily interactions may be created.

**CURIE Initiative** - Data collected as per Curie questionnaire and feedback attached. For better result, it is suggested for physical review and to collect feedbacks from the end beneficiaries.

# Table of contents

# List of figures

# List of tables

# 1 INTRODUCTION

## Overview

The principle of gender equality is enshrined in the Indian Constitution in its Preamble, Fundamental Rights, Fundamental Duties and Directive Principles. The Constitution not only grants equality to women, but also empowers the State to adopt measures of positive discrimination in favour of women. The National Commission for Women was set up by an Act of Parliament in 1990 to safeguard the rights and legal entitlements of women. The women's movement and a wide-spread network of non-Government Organisations which have strong grass-roots presence and deep insight into women's concerns have contributed in inspiring initiatives for the empowerment of women.

Gender disparity manifests itself in various forms, the most obvious being the trend of continuously declining female ratio in the population in the last few decades. Social stereotyping and violence at the domestic and societal levels are some of the other manifestations. Discrimination against girl children, adolescent girls and women persists in parts of the country. Consequently, the access of women particularly those belonging to weaker sections including Scheduled Castes/Scheduled Tribes/ Other backward Classes and minorities, majority of whom are in the rural areas and in the informal, unorganized sector – to education, health and productive resources, among others, is inadequate. Therefore, they remain largely marginalized, poor and socially excluded.

### 1.1.1 First Subsection

There is a growing concern among policy makers regarding the entry and retention of women in science. Although female academics in science are moving more towards equal representation, they are still under-represented in leading positions or in institutes of higher education with post graduate teaching and research.

In India, despite the increasing number of women in higher education in science, women's participation at higher levels of science in tenured research positions has shown little increase. Women constitute over one-third of the total science graduate and post-graduate degree holders, but comprise only 15-20% of the tenured faculty across research

institutions and universities in India, (INSA Report, 2004). Science career begins at the early stage soon after PhD and it is important for women to establish themselves during their early 30s. But this period coincides for most Indian women with marriage and family commitments. Breaks or temporary research positions of 3-5 years during this period do not provide the advantage of moving up the ladder at a later stage when family commitments take less time.

### 1.1.2 Second Subsection

The problem of impact of dual role related to family care and marriage on career continuity and attainment of women in science in India begins at the stage of higher studies and research in science. Data reveals that a large number of women dropouts from higher studies and research in science (Kurup, 2016, Chandra et al, 2008; Martinez, 2007).

## 1.2. Aim of the project

Aim of the study is to assess women scientists for eastern region, Odisha and West Bengal, under Government of India's gender mainstreaming programme. The goal of this study is to bring about the advancement, development and empowerment of women in science. The Policy will be widely disseminated so as to encourage active participation of all stakeholders for achieving its goals.

## 1.3. Objective

The objectives of the study are formulated as follows:

- To develop a web-based national platform with Geo-Spatial database for women in science.
- The Database not only promote women empowerment in science, but it's output use for nation building.
- Somewhat check duplication in science research, on the other hand its application will be widen
- To develop AI based DSS platform for Planners

- Extend benefit to more and more women in science
- To create a centre of excellence for women empowerment in science at Eastern Region

## 1.4. Methodology

In keeping with the study objective and scope of research, the respondent group consists of only female respondents who have availed WOS-A, WOS-B, WOS-C, BioCare and UGC-PDF science scheme for their career development through DST, DBT and UGC under the Government of India financial aid towards women empowerment.

The concerned institution is adopted the following methodology to collect the data from the women scientists:

**A. Team Formation:** SOPHITORIUM has formed a team to do survey in Eastern India States (Odisha & West Bengal) in which a team leader is present to guide the team members of that team. The number of teams formed based on the total number of districts in each state. The team leader trained their teams for gathering the information fruitfully.

**B. Questionnaire Set:**The team members discussed the following points with each woman scientist based on centrally designed questionnaire set:

- Personnel Information
- Information related to Current affiliated institution
- Pre-Project Condition of Women Scientist
- Projects Related Information
- Project wise information
- Information about Institution
- Mentor's information
- Status of the project
- Current job details
- Professional development

- ❖ Skill Development
- ❖ Programme feedback

**C. Field Visit:** After the preliminary study of both Odisha and West Bengal and responses of women scientist, the project team will visit to different research /academic institutions, if need arises.

**D. Contact Over Phone/Mail/Fax/Speed Post/Social Sites:** All possible means of contact will be used to collect the preliminary data from the listed women scientists.

**E. Conducting WorkshopProgramme:**For the awareness of the women scientists regarding issues like financial and technical supports to carry the project, hindrances of societal burden, IPR issues etc. may require direct interaction with sponsoring agencies. So, it is suggested to conduct workshop on state-wise.

## 1.5. Chapter Scheme

The entire information as collected for the project will be divided into two parts – Preliminary Part and Main Part of the report. The first part will be contented Title, Inner Title followed by disclaimer, Preface, Acknowledgements, Abstract, and Content. The main body of reports will be 05 Chapters – Introduction, Study Region, Survey and Data Collection, Data Analysis, Suggestions and Strategies and Conclusion. At the end, References and Appendix will be given.

# 2 STUDY REGION

## 2.1. Introduction

Since this is a Network Projects entitled "Assessment of Government of India's Gender Mainstreaming Programs for Women in Science" and sponsor by DST (GOI), SOPHITORIUM is entrusted to carry out the job for Eastern Region of states Odisha and West Bengal. After updating with primary information of the states and the project's goals, two teams are formed and entrusted to collect data from the women scientists of Odisha and West Bengal respectively. The first team has undertaken the jobs in Odisha state. Later on, the second team has visited West Bengal to collect data.

## 2.2. **About the States** (in Brief)

### 2.2.1. The State of Odisha

The Odisha state, which was once a land of Kings and Kingdoms, now boasts of being rich source of natural resources. Its people, temple architecture, classical dance, religions, fairs and festivals, unique handlooms and handicrafts, green woodlands, rock caves, charming blue hills have always attracted historians, tourists and travellers from all over the world. Its rich history, revolutionary freedom movement, fascinatingly sculptured temples and monuments, tribal life characterized by dance, music, rituals, hunting, gaiety and wild ways have become important topics of research for great historians and scholars.

For economic development of any state, industrialization plays a vital role. But for creating a viable atmosphere for industries and corporate houses a sound and smooth infrastructure becomes top priority for the government. Keeping that sentiment in view the government of Odisha since few years has consistently tried to provide a fine-tuned industry and investment friendly infrastructure. In that direction the government is becoming successful which is seen through a lot of major changes and improvements occurred in the fields of infrastructure. The most important agenda of government of Odisha has become providing the state best connectivity through roads, rail, sea, and air.

On the eastern coast of India, perpetually washed by the blue waters of the Bay of Bengal, lies the many splendour of State of Odisha. Endowed with a rich cultural heritage of old-world charms and bestowed liberally with the bounties of nature, sometimes tender, sometimes awe-inspiring, it is a kaleidoscope of past splendours and present glamour, a fascinating state with unspoiled beaches, sprawling lakes, luxuriant forests, teeming wildlife, superb monuments, exotic handicrafts, traditional tribes, colourful fairs and festivals, scintillating music and dances. It is a land of unforgettable memories and hidden treasures. Many parts of this fascinating land remain relatively unexplored.

### 2.2.2. The State of West Bengal

The name of Bengal or Bangla is derived from the ancient kingdom of Vanga, or Banga. In early Sanskrit literature references to the name of Banga occur, through its early history is almost obscure until the 3rd century BC. However, Stone Age tools dating back 20,000 years have been excavated in the State. Remnants of civilization in the region date back four thousand years, when the region was settled by Dravidian, Tibetan-Burman, and Austro-Asiatic peoples. The region was a part of the Vanga kingdom of ancient India. The kingdom of Magadh was formed in the 7th century BC, consisting of the Bihar and Bengal regions. It was one of the four main kingdoms of India at period of Mahaveera and Buddha, and was consisted of several Janapadas.

After 1947, the merger of native princely states began which ended with its final reorganisation in 1956 (as per Recommendations of the States Reorganisation Act, 1956) when some Bengali speaking areas of a neighbouring State were transferred to West Bengal. The land frontiers of the State touch Bangladesh in the east and are separated from Nepal in the west, Bhutan lies in the north-east, while Sikkim is on the north. On the west are the States of Bihar and Jharkhand, while on the South lies Odisha and the Bay of Bengal washes its southern frontiers.

Agriculture is the main source of income for about 70 per cent of the population. Jute and rice are the principle crops grown in the State, along with the tea, maize tobacco and

sugarcane. The State Government is concerned with activities relating to policy decisions on agricultural producing and productivity, and its extension through technology generation, transfer of technology, ensuring availability and timely distribution of agriculture inputs specially seeds, fertilizers, subsidy, credit etc. along with support service through soil conservation, water conservations, seed testing, seed certification, plan production, quality control of fertilizers and pesticides etc.

The salient features of the State policy on industrial promotion and economic development are to welcome foreign technology and investment, private sector investment in power generation, improvement and upgradation of industrial infrastructure. The thrust areas are petrochemicals and downstream industries, electronics and information technology, iron and steel, metallurgical and engineering, textile, leather and leather products, food processing, medicinal plants, edible oil, vegetable processing and aquaculture.

In the recent years the flow of investment in the districts like Bankura, Midnapur, Burdwan and Purulia has been quite impressive. The effort of the State Government to accelerate investment in the State has reflected in investment proposals through EMIs. During 2010, West Bengal received 209 IEMs with investment proposals of Rs.42,765 crores and employment potential of 58859 persons.

Major investments are taking place in mine, steel plants, forging, pig iron etc. The easy availability of power, removal of freight equalisation, close proximity to areas with natural resources relevant to the industry, and a labour force, traditionally skilled in operating iron and steel units are factors that have influenced the surge in investment in this sector. In recent years, investment in the chemical and cement industry has also picked up.

The Food Processing Industries and Horticulture Department of the State Government promotes food-processing industries in the State. The State has identified the Information Technology (IT) sector as a priority sector for growth. The IT Hub at Salt Lake in Kolkata is India's first fully integrated electronic complex spread over 150 acres of green pollution free area near airport.

Tourism has emerged as one of the largest service sector industries of the world. Internationally, this boom is travel and tourism industry is expected to continue, and will be an opportunity for every region in the world to be part of this process. India is also becoming a leading international tourist destination. Against this backdrop, the Department of Tourism in West Bengal has been making concerted efforts to boost the tourism industry in the State. West Bengal is endowed with distinct natural attractions like impressive mountain range, virgin forests, variety of wildlife, verdant tea gardens, meandering rivers, sandy beaches and the world's largest mangrove forests, the Sunderbans. Along with this, the State also has a rich tradition of art, craft, cultural and cuisine. All these facets, together, make West Bengal a highly potential tourist destination.

(Collected from Know India - https://knowindia.gov.in/)

### 2.3. Education & Literacy Scenario of the study region(respective States allocated)

#### 2.3.1. In the state of Odisha

As per Census 2011 population of Odisha is 4,19,74,218. Out of this the Rural population of Odisha is 3,49,70,562 and Urban population is 70,03,656. During the period, out of 52,73,194 Child Population in the age group 0-6 years recorded in the State 45,25,870 are concentrated in rural areas whereas in urban areas it is 7,47,324.

The number of literates in Odisha is 2,67,42,595 out of which 2,13,77,915 are recorded in rural areas whereas in urban areas the number of literates recorded is 53,64,680.The literacy rate of Odisha as per 2011 Census is 72.9 per cent. In rural areas the literacy rate is 70.2 per cent whereas in urban areas it is 85.7 per cent. The male rural literacy rate is 79.6 per cent whereas the female literacy rate in rural area is 60.7 per cent. The male literacy rate in urban area is 90.7 per cent and in case of females the literacy rate is 80.4 per cent. Among the districts the highest literacy rate in rural areas noticed is in the district of Jagatsinghpur (86.5%) whereas the highest literacy rate in urban areas recorded is in the district of Khordha (91.0 %). The lowest literacy rate of 43.9 per cent

is recorded in the rural areas of Nabarangpur district whereas the lowest urban literacy rate of 74.5 per cent is recorded in the district of Malkangiri. The highest male literacy rate of 92.5 per cent is recorded in the rural areas of Jagatsinghpur district whereas the highest urban male literacy rate recorded is in the district of Khordha (94.2 %). The lowest rural male literacy rate is recorded in the district of Koraput (54.1 %) whereas the lowest urban male literacy rate is recorded in the district of Malkangiri (83.4 %). The highest female literacy rate in rural areas is noticed in the district of Jagatsinghpur (80.4 %) whereas the lowest rural female literacy rate recorded is in the district of Koraput (31.3 %). The highest urban female literacy rate of 87.5 per cent is recorded in the district of Khordha whereas the lowest urban female literacy rate 64.9 per cent recorded is in the district of Malkangiri.

(Collected from Department of Schools and Mass Education - https://sme.odisha.gov.in/index.html)

In fact, the literacy rate of the State is 0.4 per cent less than the national average of 77.7 per cent. Similarly, the percentage of an educated person is around 7.3 per cent less than the national average of 38.7 per cent. The male literacy rate of the State is around 84 per cent while the female literacy rate stands at 70.3 per cent. Literacy rate in urban and rural areas remains 90.2 per cent and 74.9 per cent respectively. Odisha's literacy rate is higher than neighbours Andhra Pradesh (66.4 per cent) and Jharkhand (74.3 per cent) but lower than West Bengal (80.5 per cent). The literacy rates of Odisha and Chhattisgarh are equal. Kerala has the highest literacy rate of 96.2 per cent. Likewise, the percentage of educated persons in the State is lower than its neighbour Andhra Pradesh (33.9 per cent) and Chhattisgarh (32 per cent) but higher than West Bengal (30 per cent) and Jharkhand (28.7 per cent).

(Collected from Indian Express - https://www.newindianexpress.com/states/odisha/2019/nov/26/in-odisha-773-per-cent-literate-but-314-per-cent-educated-2067251.html#:~:text=The%20male%20literacy%20rate%20of,stands%20at%2070.3%20per%20cent.&text=Literacy%20rate%20in%20urban%20and,and%2074.9%20per%20cent%20respectively.&text=The%20literacy%20rates%20of%20Odisha,rate%20of%2096.2%20per%20cent.)

### 2.3.2. In the state of West Bengal

According to 2011 Census, its total population is 91,347,736 (7.55 per cent of India's total population), density is 1029 persons per sq. km. (in terms of population density West Bengal is on the second among the Indian states). Since the time of British raj west Bengal is a cultural heritage and educational developed state then other states of India, because this time Kolkata is the capital of British raj that's why the dispersion of education from Kolkata in the whole state. But this state has huge diversity of literacy rate on the district level and micro level also, on the spot light of various socio-economic categories.

In present, West Bengal has held the 20th position on literacy rate rank of the Indian state and union territory. According to 2011 Census west Bengal literacy rate is 77.08 percent, where Indian literacy rate is 74.04 percent. In last decade, India increases his literacy rate 9.21 percent, where West Bengal has increases his literacy rate below the national level (8.44 percent).West Bengal has a literacy rate 77.08 with differential of 82.67 percent male literacy and 71.16 percent females. West Bengal has 31.89 percent urbanization which differs from 100.00 percent in Kolkata to 8.36 percent in Bankura. There are 19 districts with an increase of one district compare to 2001 census.

*(Collected from Som, Kalyan & Mishra, Ramesh. (2014). Literacy and Their Differential in West Bengal. International Journal of Science and Research (IJSR). 3. 6.)*

Literacy is considered as one of the indicators of educational development of a nation and an essential but necessary step towards education. Literacy can also help in the development of human civilization through reducing poverty, ignorance, exclusion, etc.The present study has examined the educational status of women in west Bengal with respect in India of various governmental CensusReport (1951-2011). According to 2011 census reports the women literacy rate in India 65.46% & 71.16% in west Bengal, So the women literacy rate in west Bengal is satisfactory position with respect in India, also the male-female gender gap has been decreased. As per census 2011, the total literacy rate in West Bengal has grown from 68.64% in 2001 to 77.08% in 2011. East Medinipur has the highest literacy rate of 87.66% in West Bengal.The position of West Bengal has always been higher than the all-India average; and West Bengal ranks the sixth among major states in this regard. But until the last decade, the improvement in literacy has been

relatively slow in the state, especially for women. As a result, according to the Census, the Literacy rate of female in West Bengal has increased from 36.56 % in 1981 to 46.56 % in 1991 and to 60.22 % in 2001 and to 71.16 % in 2011 regarding female literacy in India. The trend of female literacy rate in West Bengal has been increased, this is the highest improvement for women literacy rate in West Bengal.

*(Collected from JETIR November 2017, Volume 4, Issue 11)*

## 2.4. Situation on STEM in the study region

### 2.4.1. In the state of Odisha

Higher Education (H.E) in general, unlike basic education and health, is not a matter of right. Neither it is of immense importance for the policy makers as there are already too many problems to handle. This is more so in the case of a big and poor country like India. The same logic applies to Odisha where the priorities are in favour of basic needs. However, the role of higher education as nurturing the thinking and opinion making class on behalf of the society cannot be undermined. What about higher education for Women? It is well known that education in general and women's education in particular is a reflection of a nation's state of development. However, progress in literacy and reduction of high dropout rate may not be accepted as the only solution for further development. In this context, it is pertinent to study women's higher education. There are a lot of studies on India as a whole. Odisha, one of the backward states in almost all parameters, lags behind the rest of the states in women's education also. However, state figures cannot give a clear picture regarding the inter-district disparity. The present paper attempts to look at the problem of women's higher education from district perspectives. It finds that higher education for women is a visibly neglected area of research. 2011 census data reveals that only6.67% of literates of the state are graduates or above which is less than national average of 8.15%. 12.03% have studied till matriculation and 6.5% population has shown higher secondary as the highest qualification.65.93% of graduates are non-technical. The present study using 2011 Census data for education finds that a high percentage of graduates and above women goes for graduation without technology. There is huge inter district disparities across social groups in Higher Education completed by women. Thus, too much emphasis on literacy and providing incentives for literacy

programmes only overshadows the importance of higher education for women which is significant in the long run. The policies should be such that more and more women opt for higher education. Proper planning and implementation of schemes would go a long way to help these districts.

*(Collected from IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 21, Issue8, Ver. 7 (Aug. 2016) PP 01-10)*

In the year 2019, IBM (NYSE:IBM) announced that it has signed an Memorandum of Understanding(MoU) with The Department of School and Mass Education, Government of Orissa to introduce 'IBM STEM for Girls' program across 100+ high secondary schools across districts that will advance the skills and careers of 20,000 students and 10,000 boys in Science, Technology, Engineering and Math (STEM) fields. The collaboration is part of a three-year programme between IBM and Indian state governments to increase the participation of girls and women in STEM careers.

'STEM for Girls' is an IBM Corporate Social Responsibility initiative primarily aimed at improving education-to-work and career pathways for girls who are studying in Government schools. The program includes imparting training in digital literacy, coding and technology skills; 21st century skills and career development, with an aim to enable girls' empowerment and increase their interest in STEM education and careers.

*(Collected from Odisha Diary* - https://orissadiary.com/ibm-signs-mou-odisha-government-introduce-stem-girls*/)*

### 2.4.2. In the state of West Bengal

Education plays a crucial role in social- economic development of a country. It can also help in the development of human civilization through reducing poverty, ignorance, exclusion, etc. So, education must be provided in every section in our society especially marginalized sections who are the deprived classes in our society. After completion of elementary and secondary education, attention must be paid on higher education. Today India's higher education system is the World's third largest education system after U.S and China. But the enrolment ratio in higher education is not as per expectation.

According to ASHE (Annual Status of Higher Education of States & UTs in India) 2013 total enrolment of students in regular mode in higher education in India is around 241.8 lakes, with 55.7% male & 44.2% female enrolment. In India women consist half of the total population, but their enrolment in higher education is lower than men's enrolment. So on the basis of the above discussion, it can be said that that gender gap exit here in higher education system which is not a good indication for us. Present paper attempts to analyze participation and problems of women in higher education in India as well as in West Bengal. This paper also shows some suggestions on the basis of findings to reduce the gender gap in higher education.

*(Collected from International Journal of Humanities & Social Science Studies (IJHSSS) A Peer-Reviewed Bi-monthly Bi-lingual Research Journal ISSN: 2349-6959 (Online), ISSN: 2349-6711 (Print) Volume-I, Issue-III, November 2014, Page No.166-172)*

STEM Learning supports the government of West Bengal in its endeavour to promote & improve the quality of education in the state. The mission of the government is to equip children with knowledge, skills and values to enable them to become good human beings. The Literacy rate in West Bengal has seen an upward trend and is 76.26 percent with a population of 9.13 Crores (source: www.census2011.co.in). Thus, STEM Learning has been committed to enhance the basis of learning by multiple efforts, including by being the implementing partner for the installation of Mini Science Centres (MSCs).

Corporates such as Tata Metalicks, ICML, World Vision and ECML have been instrumental in installing 12 MSCs in the districts of West Bengal with an objective to increase the scientific temper & inquisitiveness among students, so they can be ready for the future. Integrating STEM Learning in the education sector develops curiosity, inquisitiveness, critical-thinking, problem-solving, imagining, innovating, questioning and exploring, designing and building, testing and modifying their solutions to complex problems among learners.

*(Collected from STEM* https://stemlearning.in/east/west-bengal/*)*

## 2.5. Benefits for this study to the study region

The Indian women have cast of their age-old shackles of serfdom and male domination. She has come to her own and started scaling the ladders of social advance with proud and dignity. Women of India are now uplifted and emancipated and granted equal status with men in all walks of life-political, social, domestic and educational. They have a franchise; they are free to join any service or follow any profession. Free India has, besides her woman prime minister, women ambassadors, women cabinet ministers, women legislators, women governors, women scientists, engineers-doctors-space researchers-giant IT specialists, women Generals, women public officers, judiciary officers and in many more responsible positions. No distinction is now made in matters of education between boys and girls. Their voice is now as forceful and important as that of men. They are becoming equal partners in making or dismissing of a government.

Two major reasons are responsible for this situation, the governor said. First, women's perception of their role and function in society, and second, society's expectation of their contribution. Women are divided between two spheres: management of the home and family, and the fulfilment of job responsibilities. Family commitments, either due to one ‘s choice or as a result of cultural enforcement, have impaired women‘s capacity to realise their potential. This puts them at a disadvantage in many science and technology related jobs that are dynamic and competitive in nature.

Besides, women constituting half the population in India are grossly underrepresented at almost all levels of science education, R&D and employment due to a variety of socio-cultural factors. According to the National Task Force on Women in Science report of the Department of Science and Technology (DST), women form less than 25 percent of scientific faculty in various institutions and universities, except those under Indian Council of Medical Research (ICMR) and Department of Biotechnology (DBT), which are basically engaged in biological research.

To bridge this gap and to make them come forward in science and technology, DST has introduced a new scheme to promote participation of women in the field of science. DST and Indo-US Science & Technology Forum (IUSSTF) have jointly announced the Indo-US Fellowship for Women in STEMM (Science, Technology, Engineering, Mathematics

and Medicine). "This program is designed to provide opportunities to Indian women scientists, engineers and technologists to undertake international collaborative research in premier institutions in the US to enhance their research capacities and capabilities," said Namita Gupta, scientist with DST.

The Women's Science Congress provides a forum for women scholar, scientists and students to explore more and engage in science. "Through this avenue, more young female minds can be inspired to be a part of scientific community, to engage themselves in active research in science," said Prof Vijay Laxmi Saxena, former General Secretary of the Indian Science Congress Association. Prof. Adya Prasad Pandey, Vice Chancellor, Manipur University said the congress is a step towards capacity building of women, to experiment their ideas, to share their research and nurture young minds for innovative research.

*(Collected from* https://www.firstpost.com/tech/news-analysis/dst-has-introduced-a-new-scheme-to-promote-participation-of-women-in-the-fields-of-science-and-technology-4396739.html*)*

### 2.5.1. In the state of Odisha

The key elements ofthe strategy for development of women scientists in the State as undertaken by the Government today under overall development are as follows - a) adoption of political and administrative measures to minimize gender bias in recruitment and to improve working condition, b) high priority to increase female literacy and to impart quality education to girls, c) a life cycle approach to women's health with a focus on reproductive health, d) concrete efforts to improve their skills by way of providing vocational training in various fields and to enhance their capabilities to earn more, e) creation of additional productive opportunities through women Self Help Groups and associations, f) renewed efforts to project a positive image of girl child and woman, g) with a view to ensuring flow of adequate resources and benefits for women from all developmental programmes, funds to be earmarked for the benefit for the women component.

*(Collected from https://sg.inflibnet.ac.in/bitstream/10603/189789/7/07_chapter%202.pdf)*

### 2.5.2. In the state of West Bengal

On the proposed logistics policy, the official said, "The West Bengal government may need a funding requirement of USD 120-150 million (Rs 1,000 crore approx) to lay the initial groundwork to implement it in the short term." The authorities have suggested to set up a nodal agency, Logistics Development Council, with representation from both the industry and the government, for implementing the policy, the official said.

The state is also contemplating to earmark 500 acre of land for logistics development, out of which 100 acre may be brought out from rehabilitated land with multimodal connectivity. West Bengal is uniquely poised in its positioning as it has the advantage of multimodal logistics capabilities such as water, roads and railways, state Finance Minister Amit Mitra had said last week. The state government has primarily identified five prominent locations – Tajpur, Dankuni, Malda, Siliguri and Durgapur – that have the potential to emerge as logistics hubs catering to industrial areas located within 100-150 kilometre.

The state government encourages the development of a "Freight Village" in Sankrail on the outskirts of Kolkata where contiguous land parcel of over 100 acre is available with multimodal connectivity, sources said. The state will explore tapping international funding agencies to complement its own budgetary allocations for logistics sector development, they said. The West Bengal government anticipates a funding need for the development of the sector over the next 1015 years to fully implement the initiatives under this policy. The West Bengal government will also give impetus on skill development to create job opportunities for women in the sector.

*(Collected from* https://www.financialexpress.com/industry/west-bengal-govt-planning-to-grant-industry-status-to-logistics-sector/2056240/*)*

# 3 SURVEY AND DATA COLLECTION

## 3.1. Introduction

Women are an important section of the workforce, more particularly in the science & technology (S&T) domain. However, a large number of well-qualified women get left out of the S&T activities due to various circumstances which are usually typical to the gender. The challenges faced by them are several but most often the "break in career" arises out of motherhood and family responsibilities. To address such issues, Department of Science and Technology (DST) launched "Women Scientists Scheme (WOS)" since 2002-03. This initiative primarily aimed at providing opportunities to women scientists and technologists between the age group of 27-57 years who had a break in their career but desired to return to mainstream.

Through this endeavour of the Department, concerted efforts have been made to give women a strong foothold into the scientific profession, help them re-enter into the mainstream and provide a launch pad for further forays into the field of science and technology.

**Category of Fellowships**

Under this scheme, women scientists are being encouraged to pursue research in frontier areas of science and engineering, on problems of societal relevance and to take up S&T-based internship followed by self-employment. Following three categories of fellowships, with research grants, are available for Indian citizen:

- *Women Scientist Scheme-A*(WOS-A): Research in Basic/Applied Science.
- *Women Scientist Scheme-B* (WOS-B): S&T interventions for Societal Benefit.
- *Women Scientist Scheme-C* (WOS-C): Internship in Intellectual Property Rights (IPRs) for the Self-Employment.

Women Scientists Scheme-A (WOS-A) provides platform to women scientists and technologists for pursuing research in basic or applied sciences in frontier areas of

science and engineering. The scheme plays pivotal role in gender mainstreaming as it not only prevents brain drain from S&T system but also train and retain women in the system. The scheme initially offers opportunity to work as bench-level scientists and ultimately open new avenues for permanent position in Science & Technology.

Women Scientist Scheme-B (WOS-B) focuses on projects related to Science & Technology (S&T) interventions for societal benefit. Such project proposal should address a well-identified societal challenge and deliver possible solution(s) by way of development of viable technology/technique and/or lab-to-land technology transfer, its adaptation and scaling up. Women scientists who wish to apply under this scheme are required to develop their own project/proposals for scientific and technological solutions to address issues preferably at enhance quality-of-life the grassroots level.

Women Scientist Scheme-C (WOS-C) is being implemented by the Patent Facilitating Centre of Technology Information Forecasting & Assessment Council (TIFAC). The scheme aims to train women having qualifications in science/engineering/medicine or allied areas in the field of Intellectual Property Rights (IPRs) and their management for a period of one year in order to develop a pool of women scientists geared to creating, protecting and managing intellectual property in India. Hands-on training on different aspects of IPRs (e.g. patent search, know-how, drafting, filing, trademarks, trade secrets, copyright etc.) is major part of WOS-C curriculum in association with various Knowledge Partners (i.e. Law firms, Knowledge Processing Organizations (KPOs), Companies, Government agencies, and so on).

**DBT Bio-Care Programme**

In an attempt to enhance the participation of Women Scientists in Biotechnology Research, the Department of Biotechnology launched a Biotechnology Career Advancement and Re-orientation Programme (BioCARe) for women scientists in January, 2011 and first call for applications was announced in the year 2011. The programme is mainly for Career Development of employed/ unemployed women Scientists upto 55 years of age for whom it is the first extramural research grant. The scheme is open for all areas of Life Science / biology (including agriculture, veterinary

science and medicine). Women Scientists who are employed or unemployed or are desirous of coming back after a break can get back to the main stream by getting their first grant as the Principal Investigator. (Women Scientist who have already availed any grant as a Principal Investigator from any Government Funding Agency are not eligible to apply).

**UGC-PDF programme for women scientists**

The UGC has initiated a scheme of Post-Doctoral Fellowship for Women to those candidates, who are unemployed holding Ph. D. degree in their respective subject areas with an aim to accelerate the talented instincts of the women candidates to carry out the advanced studies and research. The total duration of the fellowship is five years with no provision for further extension. The number of slots available under the scheme is 100 per year.

### 3.2. Survey Questionnaire and Methodology for Getting Responses

**Questionnaires designed to collect data**

For various assistance programmes for women scientists, the questionnaires are made centrally and distributed to all participants institutions for the project. CEPT University, Ahmedabad is coordinating the project centrally. The questionnaires are designed base on the following components:

- Personnel Information
- Information related to Current affiliated institution
- Pre-Project Condition of Women Scientist
- Projects Related Information
- Project wise information
- Information about Institution
- Mentor's information
- Status of the project
- Current job details

- Professional development
- Skill Development
- Programme feedback

**Establishing contact with the women scientists**

The project team has prepared a forwarding letter and sent questionnaires to all women scientists as per the list of sponsor agency. If mails fail to reach them, then the matter sent to them by speed post. If any one missing the post, the team try to contact them over their mobile and tried to establish the contact over different social media.

**Workshop organised to meet the women scientists**

Workshop on the topic concerned was organised by Sophitorium Institute of Lifeskills& Technology, Jatni, Khurda, Odisha on 25th May 2019 at Hotel Excellency, Bhubaneswar, which is sponsored by NSTMIS Division, Dept. of Science & Technology, GOI, New Delhi.

- Aim of the workshop: To gather information about the women working in Science (as the database reveals dissatisfaction regarding the growth and career advancement of women in their professions from the state of Odisha).
- To maintain a proper record which plays a vital role in decision making for implementing of any policies for further improvement of women in the field of science (especially in R&D).
- During the workshop different aspects of implementation of various Government sponsored projects are also discussed.
- Dr. H. B. Singh (Scientist, Department of Science & Technology (DST), New Delhi), Prof. K. K Mishra (Vice Chancellor, Utkal University of Culture, Bhubaneswar), Dr. Ashok Mishra, Dr. Subhash Mishra (Retired Scientist), Dr. Abhay Nayak (Registrar, NISER, Jatni, Bhubaneswar), Dr. Debi Prasad Sandha (Retired Scientist, CSIR-IMMT, Bhubaneswar) were invited to conduct the workshop.

Fif


**Fig. 3.1. Inaugural Function of the workshop on 25 May 2019.**

Interaction with the women scientists was started after formal inauguration programme. 41 women scientists had presented their scientific works completed or pursuing under the support of the Govt. Their constraints and challenges while carrying the projects were also discussed during interaction. Dr. H. B. Singh was giving reply to the participants on Govt. stands on the specific issues. Dr. D. P. Sandha was emphasizing on research outputs of the sponsor projects in terms of publications in quality journals, patent filing, authorship pattern etc.

It was decided to cover maximum stakeholders under this project. Women scientists who have not completed the questionnaire, the project team will reach to them and collect the data. It is also noticed that some women scientists, who are getting support form DBT or

any other agencies other than DST, were not willing to provide data. Such case, letter will be sent to their organization and pursue the case accordingly. Decision was taken to expedite data to enrich the database. Cooperation is solicited from all the project members to collect data from different stakeholders.

### 3.3. Methodology for collecting other (secondary) Data

To study the background of the states, it is required to collect information from secondary sources on Odisha and West Bengal. Census report 2011 and some related articles referred to collect education and literacy rate in the states. Articles are also referred to know the status of STEM programme in the states. Some scientific institutions are also studied in the context of career development of the women scientists.

### 3.4. Problems and Challenges

During the data collection, it is noticed that it is not so easy to reach to the women scientiststo collect data as per the questionnaires. Most of them arenot responding to Email, Speed Post or Mobile. This situation is due to change of address, the concerned women scientists leaving institution after completion of the projects.,not proper contact address etc. in compare to data furnished by the sponsor agency. Many questionnaires returned due to invalid address is the major hurdle in collecting data.

On the other hand, some women scientists are hesitated to fill certain fields due to institutional and guidance fear. Due to proper guidance, they used to leave blanks to many of the fields. The team found difficulty in authentication of the record.

# 4 ANALYSIS

## 4.1. Introduction

Analysis is made as per the data collections at central database. The required data for the eastern region covering Odisha and West Bengal is downloaded and studied the nature of the fields and values. All the data is filtered and made sub-table to analyze and interpreted as warranted.

## 4.2. Women Scientists Responses

(No of responses w.r.to total no of beneficiaries; Geographical Spread; Age Group; Subjects-wise; no. of projects; no of schemes; achievements; related to support received from mentor, institution, social; problems faced; - it is advised to take each question and do the analysis using univariate and bi-variate tables, get the inferences)

### 4.2.1 Back Ground Study – Odisha

**Table 4.1.: Response Received from the WOS – Odisha and West Bengal**

| Category | Odisha | Received | West Bengal | Received |
|---|---|---|---|---|
| Bio-Care | 9 | 9 | 20 | 11 |
| WOS A | 49 | 42 | 210 | 55 |
| WOS B | 7 | 5 | 20 | 20 |
| WOS C | 9 | 9 | 35 | 34 |
| UGC-PDF | 7 | 2 | 21 | 2 |
| **Total** | **81** | **67** | **306** | **122** |
| **%** | **82.72** | | **39.87** | |

From the Table 4.1., it is noticed that 82.72% of data collected for the state of Odisha. Maximum responses received in the area of Bio-care (100%) and WOS C (100%)

followed by WOS A (85.71%), WOS B (71.43%) and UGC-PDF (28.57%). Multiple projects haveundertaken by Fahima Dilnawaz (3) and Seema Tripathy (2) in Odisha.

Women Scientists from other 04 states (Jharkhand, West Bengal, Telangana & New Delhi) are preferred to work in Odisha. 58 (94.03%) women scientists are belonged to the state of Odisha out of 67and 04 (5.97%) from other states as mentioned.From thetotal, 55 (82.09%) are married and unmarried only 12 (17.91%). So, nearly 82% of women scientists fulfilling both in development of science as well as social responsibility in the state of Odisha.

General category is the maximum with 56 (83.58%) followed by 07 (10.45%) OBC, 02 (2.99%) SC and 02 (2.99%) PH. ST is not having any representation. 46 (68.66%) WOS have undertaken the projects to pursue their Ph.D. followed by 07(10.45%) in M.Sc., 06 (8.96%) in M.Tech. 02 (2.99%) in B.Tech., 03 (4.48%) in M.Phil. and others 03 inD.SC, M. Pharma, and M.B.B.S. having 1049% each. For details data, the *Appendix 1* may be referred.

### 4.2.2. Back Ground Study – West Bengal

From the Table 4.1., it is also noted that 39.87% of data collected for the state of West Bengal. Maximum responses received in the area of WOS B (100%) and WOS C (97.14%), followed by Bio-care (55%), WOS A (26.19%),and UGC-PDF (9.52%).

From the sample of 122, all the women scientists are representing from West Bengal only.
For West Bengal 104 (84.44%) WOS are married and 18 unmarried.

For West Bengal data, 111 (90.98%) General, 04 (3.28%) OBC, 05 (4.1%) SC, 01 (0.81%) ST and 01 (0.81%) PH are noticed. From the samples of 122 women scientists, 90 (73.77%) Ph.D., 18 (14.75%) M.Sc., 05 (4.1%)M.Tech., 05 (4.1) B.Tech., 02 (1.64) PDF., 01 (1.1%)M.Pharm. and 01 (0.82%) M.E. are noticed.For details data, the *Appendix 2* may be referred.

### 4.2.3. Working Institutions in Odisha

**Table 4.2.: List of Institutions where WOS are working in Odisha**

| Institutions | WOS |
|---|---|
| NIT, Rourkela | 8 |
| CSIR-IMMT, Bhubaneswar | 7 |
| ILS, Bhubaneswar | 7 |
| SITAL Khurda | 6 |
| Utkal Univercity, Bhubaneswar | 5 |
| KIIT University | 4 |
| Centre for Biotechnology, SOA | 3 |
| ICAR-CIFA, Bhubaneswar | 3 |
| IIT, Kharagpur | 3 |
| ICAR-IIWM, Bhubaneswar | 2 |
| ICMR-RMRC, Bhubaneswar | 2 |
| TIFAC | 2 |
| AIIMS, Bhubaneswar | 1 |
| Berhampur University, Berhampur | 1 |
| Govt. (A) College, Rourkela | 1 |
| Fakir Mohan University, Balasore | 1 |
| ICAR-CIWA, Bhubaneswar | 1 |
| ICAR-CRRI, Cuttack | 1 |
| Institute of Mathematics and Applications, Bhubaneswar | 1 |
| Institute of Physics, Bhubaneswar | 1 |
| ILRI (Odisha Programme) | 1 |

| | |
|---|---|
| KKS Womens College | 1 |
| Rama Devi Women's University, Bhubaneswar | 1 |
| Ravenshaw University, Cuttack | 1 |
| RPRC, Bhubaneswar | 1 |
| TITE, Bhubaneswar | 1 |
| V.S.S.M College, Burla | 1 |
| **Total** | **67** |

Table 4.2. may be referred for the following findings for the state of Odisha:

- Collected data from 62 Women Scientists working in 26 institutions in Odisha and 01 in West Bengal.
- Maximum women scientists are involved in NIT, Rourkela and followed by CSIR-IMMT, ILS, Bhubaneswar and others.
- This figure may change, if more WOS participated from these institutions. Only 76.54% are participated.

### 4.2.4. Working Institutions in West Bengal

**Table 4.3.: List of Institutions where WOS are working in West Bengal**

| Institutions | WOS |
|---|---|
| IIT Kharagpur | 23 |
| University of Calcutta | 23 |
| TIFAC | 12 |
| Jadavpur University | 9 |
| Presidency University | 7 |
| CSIR-CMERI, Durgapur | 5 |
| CSIR-IICB | 4 |

| | |
|---|---|
| Indian Association for the Cultivation of Science | 3 |
| Bose Institute | 2 |
| CSIR-CGCRI | 2 |
| Techno India University | 2 |
| Visva Bharati | 2 |
| Westbengal State University | 2 |
| Ballygunge Science College | 1 |
| Bengal Engineering & Science University, West Bengal | 1 |
| Bio Medical Laboratory Science and Management Vidyasagar University | 1 |
| BPUT, Odisha | 1 |
| Calcutta School of Tropical Medicine | 1 |
| ChittaranjanZnational Cancer Institute | 1 |
| CSIR-CCMB, Hyderabad | 1 |
| Durgapur Govt. College | 1 |
| Haldia Institute of Technology | 1 |
| I.P.G.M.E&R | 1 |
| ICAR- National Research Centre for Orchids | 1 |
| Indian Institute of Chemical Biology | 1 |
| Institute of Zgenetic Engineering | 1 |
| JIS University | 1 |
| National Institute of Cholera and Enteric Diseases (NICED) | 1 |
| NIT, Durgapur | 1 |
| Patent Office, Kolkata | 1 |
| Raja Peary Mohan College | 1 |
| Regional Institute of Ophthalmology Calcutta Medical College and Hospital | 1 |
| S. Majumdar & Co. | 1 |

| | |
|---|---|
| Saha Institute of Nuclear Physics | 1 |
| University of Burdwan | 1 |
| University of Kalyani | 1 |
| University of North Bengal | 1 |
| Vidyasagar College for Women | 1 |
| YogodaSatsangaPalparaMahavidyalaya | 1 |
| **Total** | **122** |

Table 4.3. may be referred for the following findings for the state of West Bengal:

- Collected data from 122 Women Scientists working in 39 institutions of WB.
- Maximum women scientists are involved in IIT, Kharagpur and University of Calcutta, and followed by Jadavpur University, Precedency University and others.
- This figure may change, if more WOS participated from these institutions. Only 39.61% are participated.

### 4.3. Inferences from the statistical analysis. *

*According to the responses received by you, considering expertise and experience, you can adopt any method/s to analyse the information collected.

#### 4.3.1. In the State of Odisha

**Table 4.4.: List of Areas where WOS are working in Odisha**

| Areas | WOS |
|---|---|
| Life Science | 23 |
| Biotechnology | 15 |
| Engineering Science | 13 |
| Chemical Science | 6 |

| | |
|---|---|
| Physical Science | 5 |
| Mathemaical Science | 3 |
| Earth Science | 1 |
| Pharmaceutical | 1 |
| **Total** | **67** |

- ❖ Maximum 23 (34.33%) WOS are working in Life Science followed by 15 (22.39%) in Biotechnology, 13 (19.40%) in Engineering Sciences and others.
- ❖ WOS are interested to work in Bio-sciences in Odisha.
- ❖ Earth Science and Pharmaceutical Science are less preferred.

### 4.3.2. In the State of West Bengal

**Table 4.5.: List of Areas where WOS are working in West Bengal**

| Areas | WOS |
|---|---|
| Life Sci. | 62 |
| Engg. Sc. | 20 |
| Chem. Sci. | 18 |
| Physical Sci. | 6 |
| Geology | 5 |
| Biotechnology | 4 |
| Earth Sci. | 2 |
| Bioinformatics | 1 |
| Environment | 1 |
| Materials Science | 1 |
| Pharm. Sci. | 1 |
| Philosophical Science | 1 |

| **Total** | **122** |
|---|---|

- Maximum 62 (50.82%) WOS are working in Life Science followed by 20 (16.39%) in Engineering. Science, 18 (14.75%) in Chemical Sciences and others.
- WOS are interested to work in Bio-sciences in WB.
- Philosophical Science may be treated as Science Philosophy.

# 5 SUGGESTIONS AND STRATEGIES

## 5.1. Introduction

Women constitute an important section of the workforce. However, in the present situation a large number of well-qualified women scientists have been left out of the S&T activities due to various circumstances. The problems faced are several but significantly, most often the "break-in-career" arises out of motherhood and family responsibilities. The options for revival of their profession are meager in current system due to restriction in age and qualification/experience criterion. Women scientists in regular employment are not eligible for WOS. However, those who are availing any temporary positions in research or academics may apply in the scheme but they have to leave their earlier assignment if WOS project approved.

## 5.2. Adopt any Methods, such as, SWOT, etc. for the specific issues raised in the Analysis as a part of suggestions

To know the specific issues and the feedback of the state women scientists, Department of Science and Technology, Govt. of India organized a workshop with the help of Sophitorium Institute of Technology and Lifeskills, Khurda, Odisha. About 41 women scientists have participated in the workshop. It was noticed that there are many of them are engaged in different scientific institutions in and around Bhubaneswar. All of them are benefitted and contributed to the society through their research findings.

Role of DST, Govt. of India was discussed in this programme and how Govt. helps women scientists by providing a strong platform to enhance their professional excellency. This leads to a strong message to the society that how women are managing both their families and professional activities in the society smoothly.

Some historical achievements by the women scientists during different periods were discussed. Women have faced a lot of constraints in mail-dominating

society. He has wished all the participants and the project's members for their success to achieve the goals under this programme. Importance of IPR was also discussed with the participants and provided solutions for the constraints faced by the participants for quality publication, patent filing and development standard and specifications of the products and process development. Some WOS were shared their works with the participants.

**Scientific Research and Family Responsibility** - Since Odisha is now preferred as education and research hub in eastern India, there are many national importance institutions are started which preferred not only by the WOS of Odisha, but liked by the neighbouring states like Chatishgarh, Jharkhand, Bihar and West Bengal. The WOS from Nearth-East are also preferred to work in Odisha.

As expected, nearly 82% of WOS in Odisha are successful in both scientific research and their family responsivities to strengthening the society in Odisha. Scientific research is not so dearer to SC&ST communities and occupied only 3% in participation of this programme.

In the case of West Bengal, it is noticed that more than 84% of WOS are successful in both scientific research and their family responsibilities and noticed very poor participation of ST community (0.81%).

### 5.3. Discussion on the Strategy which can be adopted for successful implementation by the stakeholders – Government, Beneficiaries.

**IPR Issues** – WOS are unaware of different IPR issues for their publications, patents and technology aspects of the projects. Out of 41 samples studied during the workshop, it is noticed that WOS are the primary author only in 02 cases. DST instructions should available for the authorship pattern. IPR Awareness Programme may be arranged regularly to achieve the goal.

**Updating Database** - New project should be allotted to WOS after registration in the central database which should be mandatory for all WOS.

**Availability of Knowledge Base** - WOS need regular interactions through online. Hence, special knowledge base for their daily interactions may be created.

### 5.4. CURIE initiative of DST enhancing research facilities in women universities

Research facilities in 8 women universities have been enhanced with support from the CURIE (Consolidation of University Research for Innovation & Excellence in Women Universities) initiative of the Department of Science & Technology, (DST) Artificial Intelligence facilities have been set up in 6 women universities with support from the CURIE-AI facility initiative.

The women universities have received total support of Rs 40 crore from the CURIE initiative started in the year 2008-09, and Rs. 4.20 crore from the CURIE-AI facility initiative started in the year 2019.

The Department of Science and Technology (DST) is implementing 'Knowledge Involvement in Research Advancement through Nurturing (KIRAN)' Scheme to provide various career opportunities for women scientists and technologists. It is primarily aimed to bring gender parity in the Science & Technology sector by inducting more women talent in the research & development domain through various programmes. CURIE & CURIE-AI facility of the Department under the KIRAN scheme, including other schemes, empowers women in science and technology.

In the year 2008-09, DST took a special initiative, 'CURIE,' to support women universities for improving R&D infrastructure and enhance research facilities. CURIE support has been extended to 08 Women Universities in the country namely Avinashilingam Women University, Coimbatore (Tamil Nadu), Banasthali University, Rajasthan, SNDT Women University, Mumbai

(Maharashtra), Sri Padmavati MahilaVisvavidyalayam, Tirupati (Andhra Pradesh), Mother Teresa Women University, Kodaikanal (Tamil Nadu), Karnataka State Women University, Bijapur (Karnataka), Indira Gandhi Delhi Technical University for Women, Delhi (Delhi) and Rama Devi Women University, Bhubaneswar (Odisha). This year CURIE support is in the process to include 9th women university – Bhagat Phool Singh Mahila Vishwavidyalaya, Sonipat (Haryana).

CURIE support resulted in a significant increase of student enrolment at undergraduate, postgraduate, and Ph.D. levels in CURIE supported Universities. It has also enhanced the number of NET/GATE qualified students. Extramural funding has also been increased due to the presence of sophisticated labs, which resulted in publications in high impact factor journals.

In the year 2019, DST established an Artificial Intelligence lab in 6 CURIE beneficiary universities with the goal of fostering AI innovations and set up AI-friendly infrastructure to prepare skilled manpower for AI-based jobs in the future. This facility is exposing women students from these universities to different AI tools and will improve the employability of women in this upcoming sector.

**Assessment of Government of India's Gender Mainstreaming** – Data collected as per Curie questionnaire and attached at *Appendix 3*. For better result, it is suggested for physical review and to collect feedbacks from the end beneficiaries.

### 5.5. Success story of some selected WOS

The following success stories of the WOS are covered:

**Dr. Fahima Dilnawaz**, Department of Nanomedicine, Institute of Life Science, Bhubaneswar.

**Dr.Jyotirmayee Pradhan**,Assistant Professor, K. K. S. Womens College, Balasore.

**Er. Parimita Mohanty**, Assistant Professor, SITAL Group of Institutions, Kordha.

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***Appendix 1:***

## List of WOS of Odisha and their details

| .Name | State | Marital Status | Category | Qualification | Institutions | Area |
|---|---|---|---|---|---|---|
| Ahsan Nuzhat | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Anusaya Mallick | WB | Married | General | Ph.D. | ICAR-CIFA, Bhubaneswar | Life Science |
| Aradhana Misra | Odisha | Married | General | M.Tech. | SITAL, Khurda | Engineering Science |
| Bharati Behera | Odisha | Married | OBC | Ph.D. | Utkal University | Life Science |
| Debashree Das | Odisha | Unmarried | General | M.Sc. | CSIR-IMMT, Bhubaneswar | Chemical Science |
| Deepanjita Sahoo | Odisha | Married | General | M.Sc. | SITAL Khurda | Physical Science |
| Fahima Dilnawaz | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Fahima Dilnawaz | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Fahima Dilnawaz | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Garima Singh | Odisha | Married | General | Ph.D. | NIT, Rourkela | Life Science |
| Gayatri Nahak | Odisha | Married | General | Ph.D. | Utkal University, Bhubaneswar | Life Science |
| Geetanjali Agnihotri | Odisha | Married | General | Ph.D. | Institute of Life Sciences | Life Science |
| Gopa Mitra | Odisha | Married | General | Ph.D. | Rama Devi Women's University | Life Science |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ipsita Mohanty | Odisha | Unmarried | General | M.Sc. | ICMR-RMRC, Bhubaneswar | Biotechnology |
| Jyotirmayee Pradhan | Odisha | Married | General | Ph.D. | KKS Womens College | Life Science |
| Jyotsnarani Biswal | New Delhi | Married | General | Ph.D. | International Livestock Res. Inst. | Life Science |
| Kalpana Barhwal | Odisha | Married | SC | Ph.D. | AIIMS, Bhubaneswar | Life Science |
| Kamal Kumari Panda | Odisha | Married | General | D.Sc. | Berhampur University | Biotechnology |
| Karthika Parvathy K.R. | Odisha | Married | OBC | Ph.D. | NIT, Rourkela | Biotechnology |
| Kiran Bala Mishra | Odisha | Married | General | M.Tech. | SITAL, Khurda | Engineering Science |
| Madhulita Das | Odisha | Married | General | Ph.D. | NIT, Rourkela | Mathematical Science |
| Madhumita Das | Odisha | Married | General | Ph.D. | ICAR-IIWM, Bhubaneswar | Life Science |
| Madhusmita Behera | Odisha | Married | General | Ph.D. | CSIR-IMMT, Bhubaneswar | Engineering Science |
| Madhusmita Panda | Odisha | Married | General | Ph.D. | V.S.S.M College, Burla | Life Science |
| MaheswataMoharana | Odisha | Unmarried | OBC | Ph.D. | CSIR-IMMT, Bhubaneswar | Engineering Science |
| Meena Misra | Odisha | Married | General | Ph.D. | Fakir Mohan University, Balasore | Biotechnology |
| Nehapadma Mohanty | Odisha | Unmarried | General | Ph.D. | Utkal University, Vani Vihar | Biotechnology |
| Nilima Dash | Odisha | Married | General | Ph.D. | CSIR-IMMT, Bhubaneswar | Earth Science |
| Pankajini Bal | Odisha | Married | General | Ph.D. | RPRC, Bhubaneswar | Life Science |

| | | | | | | |
|---|---|---|---|---|---|---|
| Parimita Mohanty | Odisha | Unmarried | General | M.Tech. | SITAL, Khurda | Engineering Science |
| Pooja RawatGanguly | Odisha | Married | General | Ph.D. | KIIT UNIVERSITY | Physical Science |
| Priyambada Nayak | Odisha | Married | General | Ph.D. | NIT, Rourkela | Physical Science |
| Priyanka Chakraborty | Odisha | Married | General | M.Phil | NIT, Rourkela | Life Science |
| Rajalaxmi Das | Odisha | Married | General | M.Tech. | SITAL, Khurda | Engineering Science |
| Rajashree Nanda | Odisha | Married | General | M.Sc. | ICAR-CIWA, Bhubaneswar | Life Science |
| Rajeswari Panda | Odisha | Married | General | B.Tech. | IIT Khadagpur | Engineering Science |
| Ranu Rani Sethi | Odisha | Married | SC | Ph.D. | ICAR-IIWM, Bhubaneswar | Life Science |
| Ratna Kumari | Odisha | Married | General | Ph. D. | KIIT, Bhubaneswar | Biotechnology |
| Sagarika Mishra | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Sagarika Sahoo | Odisha | Married | OBC | Ph.D. | TITE,Techno India Group | Engineering Science |
| SakuntalaBehura | Odisha | Married | General | Ph.D. | SOA University | Biotechnology |
| Sandhaya Kumari | Jharakhand | Married | General | Ph.D. | CSIR-IMMT, Bhubaneswar | Chemical Science |
| Sanjeeta Paul | Odisha | Married | General | M.Phil | IIT Khadagpur | Engineering Science |
| Saswati Pal | Odisha | Married | General | B.Tech. | TIFAC | Engineering Science |
| Seema Tripathy | Odisha | Unmarried | PH | Ph.D. | Centre for Biotechnology, SOA | Biotechnology |

| | | | | | | |
|---|---|---|---|---|---|---|
| Seema Tripathy | Odisha | Unmarried | PH | Ph.D. | Centre for Biotechnology, SOA | Biotechnology |
| Shampa Ghosh | Odisha | Married | General | PhD | KIIT, Bhubaneswar | Biotechnology |
| Shibani Mohapatra | Odisha | Married | General | Ph.D. | ICAR-CRRI, Cuttack | Biotechnology |
| ShirishaSuddala | Telagana | Married | General | M.Pharm. | Utkal University | Pharmaceutical |
| SmrutiSikhaBala | Odisha | Married | General | Ph.D. | NIT, Rourkela | Physical Science |
| Sofia Das | Odisha | Unmarried | General | Ph.D. | ICAR-CIFA, Bhubaneswar | Biotechnology |
| Sonia Sharma | Odisha | Married | General | Ph.D. | Govt. (A) College, Rourkela | Chemical Science |
| Sophia Pattnaik | Odisha | Married | General | M.Sc | Ravenshaw University, Cuttack | Life Science |
| Soumyashree Dhal | Odisha | Married | General | M.Sc. | NIT, Rourkela | Chemical Science |
| Sriparna Chatterjee | Odisha | Married | General | Ph.D. | CSIR-IMMT, Bhubaneswar | Chemical Science |
| SubhashreeSubhadarshini Sahoo | Odisha | Married | OBC | M.Sc. | IIT Khadagpur | Engineering Science |
| Subhashri Behera | Odisha | Married | General | M.Tech. | SITAL, Khurda | Engineering Science |
| Sudhira Panda | Odisha | Married | General | Ph.D. | Institute of Math.& Applications | Mathemaical Science |
| Surabhi DipaliMuduli | Odisha | Unmarried | OBC | Ph.D. | CSIR-IMMT, Bhubaneswar | Chemical Science |
| Susmita Mall | Odisha | Married | OBC | Ph. D. | NIT, Rourkela | Mathematical Science |
| SwarnaliBandopadhyay | Odisha | Married | General | Ph.D. | Institute of Physics, Bhubaneswar | Physics |

| | | | | | | |
|---|---|---|---|---|---|---|
| Swati Chauhan | Odisha | Married | General | Ph.D. | ILS, Bhubaneswar | Life Science |
| Swayamshree Mishra | Odisha | Unmarried | General | M.Tech. | TIFAC | Engineering Science |
| SwayansiddhaTripathy | Odisha | Married | General | M.Pharm. | Utkal University | Biotechnology |
| TithiParija | Odisha | Married | General | Ph.D. | KIIT University | Biotechnology |
| Upasana Mishra | Odisha | Unmarried | General | M.B.B.S | ICMR-RMRC, Bhubaneswar | Life Science |
| Usha Maji | Odisha | Unmarried | General | Ph.D. | ICAR-CIFA, Bhubaneswar | Biotechnology |

***Appendix 2:***

## List of WOS of West Bengal and their details

| Name | State | Marital Status | Category | Qualification | Institutions | Area |
|---|---|---|---|---|---|---|
| Aditi Bhattacharya | WB | Married | General | Ph.D. | University of Calcutta | Chem. Sci. |
| Aditi Mandal | WB | Married | General | Ph.D. | Jadavpur University | Geology |
| Anasuya Gupta | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Anindya Chowdhury | WB | Married | General | Ph.D. | TIFAC | Physical Sciences |
| Annnesha Das | WB | Married | General | Ph.D. | Institute of Zgenetic Engineering | Life Science |
| Anrini Majumder | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Antra Chatterjee | WB | Married | General | M.Sc. | IIT Khadagpur | Life Sciences |
| AnupriyaKhare Roy | WB | Married | General | Ph.D. | TIFAC | Life Sciences |
| Aparna  Mukhopadhyay | WB | Married | General | Ph.D. | Presidency University | Life Sci. |
| Aparna Mukhopadhyay | WB | Married | General | Ph.D. | Presidency University | Life Sci. |
| Archita Bhattacharya | WB | Married | General | M.Sc. | S. Majumdar & Co. | Chemical Sciences |
| Aritiri Dutta | WB | Married | General | Ph.D. | Westbengal state university | Life Sci. |
| Aritri Dutta | WB | Married | General | Ph.D. | CSIR-CCMB, Hyderabad | Life Sci. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Arunima Sengupta | WB | Married | General | Ph.D. | Jadavpur University | Life Sci. |
| Debaleena Majumdar | WB | Married | General | Ph.D. | Techno India University | Earth Sci. |
| Debasruti Chowdhury | WB | Married | General | M.Sc. | TIFAC | Physical Sciences |
| Debjani Das | WB | Married | OBC | M.Sc. | IIT Khadagpur | Life Sciences |
| Dibyarupa Pal | WB | Married | General | Ph.D. | JIS University | Biotechnology |
| Indrani Ray | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Jaba Chakraborty | WB | Married | General | B.Tech | IIT kharagpur | Engg. Sci. |
| Jaya Bhattacharyya | WB | Unmarried | SC | Ph.D. | University of Calcutta | Life Sci. |
| JayasriBasak | WB | Married | General | Ph.D. | Calcutta University | Life Sci. |
| Jhansi Lakshmi | WB | Married | General | Ph.D. | IIT, Kharagpur | Life Sci. |
| K ChabitaSaha | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Kalpana Biswas | WB | Unmarried | SC | M.E. | University of Calcutta | Chem. Sci. |
| Kankan Mukhopadhyay | WB | Married | General | Ph.D. | Presidency University | Engg. Sci. |
| Kankan Mukhopadhyay | WB | Married | PH | Ph.D. | Presidency University | Life Sci. |
| KantaBokaria | WB | Married | General | Ph.D. | Calcutta University | Life Sci. |
| Kasturi Ghosh | WB | Unmarried | General | Ph.D. | Bengal Engg. & Sci. University | Engg. Sci. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Khushi Mukherjee | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Krishna Chattopadhyay | WB | Married | General | Ph.D. | Jadavpur University | Chem. Sci. |
| Krishna Chattopadhyay | WB | Married | General | Ph.D. | University of Calcutta | Chem. Sci. |
| KusumikaGharami | WB | Unmarried | SC | Ph.D. | CSIR-IICB | Life Sci. |
| KusumikaGharami | WB | Unmarried | SC | Ph.D. | CSIR-IICB | Life Sci. |
| Lakshmi M Mukundan | WB | Married | OBC | M.Tech. | IIT Kharagpur | Engg. Sci. |
| Lata Ramrakhiani | WB | Married | General | Ph.D. | CSIR-CGCRI | Engg. Sci. |
| Madhuchhanda Sarkar | WB | Married | General | Ph.D. | CSIR-CGCRI | Engg. Sci. |
| MadhusreeRaichaudhuri | WB | Married | General | M.Sc. | IIT kharagpur | Life Sciences |
| Mahasweta Mahapatra | WB | Married | General | Ph.D. | Durgapur Govt. College | Life Sci. |
| Mahua Dhara | WB | Married | General | Ph.D. | IIT Kharagpur | Engg. Sci. |
| Mala Das | WB | Married | General | Ph.D. | University of Calcutta | Physical Sci. |
| Mallika Mullick | WB | Married | General | Ph.D. | University of Calcutta | Earth Science |
| Manju Ghosh | WB | Married | General | Ph.D. | Ind. Asso. for the Cultivation of Sci. | Life Sci. |
| Meenakshi Agarwal | WB | Married | General | B.Tech | IIT Khadagpur | Life Sciences |
| Mitali Ray | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |

| | | | | | | |
|---|---|---|---|---|---|---|
| MittasalaDayamma | WB | Married | General | Ph.D. | National Res. Centre for Orchids | Life Sci. |
| Moumita Mukherjee | WB | Married | General | Ph.D. | Ind.Asso. for the Cultivation of Sci. | Chem. Sci. |
| Mouri Ghosh | WB | Married | General | Ph.D. | IIT khadagpur | Life Sciences |
| Mousumi Banerjee | WB | Married | General | Ph.D. | NICED, Kolkata | Life Sci. |
| Mriganki Dutta | WB | Married | General | M.Sc. | IIT Khadagpur | Life Sciences |
| MrunalSanjog Gokhale | WB | Married | General | M.Sc. | IIT Kharagpur | Life Sciences |
| Nabanita Dey | WB | Married | General | B.Tech | IIT khadagpur | Engg. Sci. |
| Nandini Sengupta | WB | Married | General | Ph.D. | University of Calcutta | Geology |
| Neerajita Sarkar | WB | Married | General | B.Tech | IIT Khadagpur | Engg. Sci. |
| Nilanjana Das | WB | Married | General | Ph.D. | TIFAC | Life Sciences |
| Nivedita Dutta(Chowdhury) | WB | Married | General | Ph.D. | NIT, Durgapur | Engg. Sci. |
| Paramita Saha | WB | UnMarried | General | M.Sc. | TIFAC | Bioinformatics |
| Piyali Sengupta | WB | Married | General | Ph.D. | Presidency University | Geology |
| Pooja Rawat | WB | Married | General | Ph.D. | IIT Khadagpur | Life Sciences |
| Poulami Adhikari | WB | Married | General | Ph.D. | University of Burdwan | Engg. Sci. |
| PrabhavathySivaprakash | WB | Married | General | Ph.D. | CSIR-CMERI, Durgapur | Life Sci. |

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|---|---|---|---|---|---|---|
| PrajnaGayen | WB | Married | General | Ph.D. | Visva Bharati | Life Science |
| Prarthana Chakraborty | WB | Married | General | Ph.D. | Indian Inst. of Chemical Biology | Chem. Sci. |
| Pratima Lengar | WB | Married | General | Ph.D. | University of Calcutta | Engg. Sci. |
| Preeti Singh | WB | Married | General | Ph.D. | CSIR-CMERI, Durgapur | Engg. Sci. |
| Preeti Singh | WB | Unmarried | General | Ph.D. | CSIR-CMERI, Durgapur | Life Sci. |
| Preeti Singh | WB | Unmarried | General | M.Sc. | CSIR-CMERI, Durgapur | Engg. Sci. |
| Preeti Singh | WB | Unmarried | General | Ph.D. | CSIR-CMRI, Durgapur | Engg. Sci. |
| Priyanjalee Banerjee | WB | Married | General | Ph.D. | IIT Kharagpur | Life Sciences |
| Priyanka Chauby | WB | Married | General | M.Sc. | IIT Khadagpur | Life Sciences |
| Priyanka Ghosh | WB | Unmarried | General | M.Sc. | Jadavpur University | Engg. Sc. |
| Priyanka Ghosh | WB | Unmarried | General | Ph.D. | Jadavpur University | Life Sci. |
| Protiti Ghosh | WB | Married | General | PDF | Ballygunge Science College | Life Sci. |
| Pyali Chakraborty | WB | UnMarried | General | M.Sc. | Patent Office, Kolkata | Chemical Sciences |
| Pyali Chakraborty | WB | UnMarried | General | M.Sc. | TIFAC | Chemical Sciences |
| Ranju Tamang | WB | Unmarried | ST | Ph.D. | Vidyasagar College for Women | Engg. Sci. |
| Ratna Biswas | WB | Married | General | Ph.D. | ChittaranjanZnational Cancer Inst. | Life Sci. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Rosalima Gupta | WB | Married | General | Ph.D. | TIFAC | Physical Sciences |
| Roshni Samanta | WB | Married | General | B.Tech | IIT Khadagpur | Engg. Sci. |
| Runu Ghosh | WB | Married | General | Ph.D. | University of North Bengal | Biotechnology |
| Rupali Gangopadhyay | WB | Married | General | Ph.D. | Ind.Asso. for the Cultivation of Sci. | Materials Science |
| Sailaja Sunkari | WB | Married | General | Ph.D. | Westbengal State University | Chem. Sci. |
| Sangita Agarwal | WB | Married | General | Ph.D. | Jadavpur University | Environment |
| Sangita Chowdhury | WB | Married | General | Ph.D. | University of Calcutta | Geology |
| Sangita Sengupta | WB | Married | General | M.Sc. | IIT Khadagpur | Life Sciences |
| Sarbani Chattopadhyay | WB | Married | General | M.Sc. | IIT Kharagpur | Chemical Sciences |
| Sarbani Gupta | WB | Married | General | M.Sc. | TIFAC | Chemical Sciences |
| Saswati Sen | WB | Married | General | Ph.D. | CSIR-IICB | Life Sci. |
| Saswati Sen | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Saswati Sen | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Saswati Sen | WB | Married | General | Ph.D. | University of Calcutta | Life Sci. |
| Satrupa Das | WB | Married | General | Ph.D. | Jadavpur University | Life Science |
| Sayani Chakraborty | WB | Married | General | M.Pharm | BPUT, Odisha | Pharm. Sci. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shabana Farheen | WB | Married | General | Ph.D. | Regional Inst. of Ophthalmology | Life Sci. |
| Shampa Mallick | WB | Married | General | Ph.D. | CSIR-IICB | Life Sci. |
| Shampa Mondal | WB | Married | General | Ph.D. | IIT, Kharagpur | Chem. SciI3:I39. |
| Shaonli Das | WB | Married | General | M.Sc. | IIT Khadagpur | Chemical Sciences |
| Smita Rani Padhy | WB | Unmarried | General | M.Tech. | TIFAC(DST) & IIT Kharagpur | Engg. Sci. |
| Subarna Kundu | WB | Married | General | M.Tech. | IIT Khadagpur | Life Sciences |
| Suchandra Bhattacharya Majumdar | WB | Married | General | Ph.D. | Bose Institute | Life Sci. |
| SudeshnaMaulikChatterjea | WB | Married | General | Ph.D. | University of Calcutta | Biotechnology |
| Sufia Zaman | WB | Married | General | Ph.D. | Techno India University | Engg. Sci. |
| Sugopa Sengupta | WB | Unmarried | General | Ph.D. | Presidency University Kolkata | Life Sci. |
| Sujata BhowmickGanguly | WB | Married | General | Ph.D. | Vidyasagar University | Life Sci. |
| Sujata Law | WB | Married | General | Ph.D. | Calcutta School of Tropical Medicine | Life Sci. |
| Sujaya Bandyopadhyay | WB | Married | General | Ph.D. | IIT Kharagpur | Chemical Sciences |
| Sumana Roy | WB | Married | General | Ph.D. | Saha Institute of Nuclear Physics | Life Sci. |
| Supriya Roy | WB | Married | General | Ph.D. | University of Kalyani | Life Sci. |
| Suranjita Mitra | WB | Married | General | Ph.D. | Visva Bharati University | Life Sci. |

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|---|---|---|---|---|---|---|
| Susmita Chatterjee | WB | Married | General | Ph.D. | I.P.G.M.E&R | Life Sci. |
| SutapaSaha | WB | Married | General | Ph.D. | Presidency University | Life Sci. |
| Suvroma Gupta | WB | Married | General | Ph.D. | Haldia Institute of Technology | Life Science |
| Swagata Barma | WB | UnMarried | SC | M.Sc. | TIFAC | Physical Sciences |
| Swagata Pal | WB | Married | General | Ph.D. | Raja Peary Mohan College | Philosophical Science |
| Swagata Pal | WB | Married | General | Ph.D. | YogodaSatsangaPalparaMahavidyalaya | Life Sci. |
| Swarna Kokatam | WB | Married | General | Ph.D. | TIFAC | Chemical Sciences |
| Swati Purakayastha | WB | Married | General | Ph.D. | University of Calcutta | Chem. Sci. |
| Swatilekha Roy | WB | Unmarried | General | M.Tech. | Jadavpur University | Physical science |
| Tanaya Chatterjee | WB | Married | General | Ph.D. | Bose Institute | Life Sci. |
| Uppala Shailaja | WB | Married | OBC | M.Tech. | TIFAC | Chemical Sciences |
| Vandanan Kumari Gupta | WB | Married | General | Ph.D. | University of Calcutta | Biotechnology |
| Vibha Katiyar | WB | Married | OBC | PDF | Jadavpur University | Geology |

***Appendix 3:***

**ASSESSMENT OF GOVERNMENT OF INDIA'S GENDER MAINSTREAMING PROGRAMMES FOR WOMEN IN SCIENCE**

(Department of Science and Technology, Government of India Sponsored Research Project)

**CURIE QUESTIONNAIRE**

# INSTRUCTIONS to Fill the Form (on-Line/ hard Copy):

1. Before starting to fill the form, you may have a through look to the entirequestionnaire.
2. You may keep all the details/documents of the projects you have undertaken, or is currently on- going.
3. Please select the suitable check-box for answering thequestions.
4. Certain questions are descriptive. You may answer in the space provided. Please share your own views.
5. You are requested to add extra rows ifrequired.
6. Please do not submit the incomplete form. You may go through the filled form once again before submitting.
7. The correct information and your positive support will bring accurate meaning to the project objectives.
8. On submission of complete information and correct information, the DST will give you aCertificate of 'Women Scientist Volunteer'. Hoping to have your positive support. Thanking you in anticipation.

| Interviewer's Details: | | | |
|---|---|---|---|
| Name of the Interviewer: | | | |
| Designation: | | | |
| Email ID: | | | |
| Phone no./ Mobile No.: | | | |
| 1. Respondent Details: | | | |
| Name of the Respondent: | Dr .Sasmita Mohanty | | |
| Designation: | Professor, Dept. of biotechnology | | |
| Email ID: | Sasmita.mohanty@rdwu.ac.in | | |
| Phone no./ Mobile No.: | 7205293884 | | |
| 2. University Details: | | | |
| Name of the University: | Rama Devi Women's University, Bhubaneswar | | |
| Address of the University: | Rama Devi Women's University, Vidya Vihar, Po: Bhoi Nagar, Bhubaneswar, PIN-751022 | | |
| City: | Bhubaneswar | | |
| State: | Odisha | | |
| URL: | | | |
| Year of Establishment: | 2015 | | |
| NAAC Accreditation Status: (Year): | Will apply in 2021 | | |
| CURIE Phase Awarded: | 1st Phase Year: 2019 | 2nd Phase Year: | 3rd Phase Year: |
| 2.1 Status of the Institution/University/College | | | |
| Academic Status | Autonomous Institute | University | Deemed University |
| | Affiliated College | Autonomous College | Constituent College |
| 3. Details of CURIE Grants Received | | | |

| Phase | Awarded Year | Total Grant Awarded (Rs.) | Total amount Utilized (Rs.) | Status: On-going/ Completed |
|---|---|---|---|---|
| 1st | 2019 | 8792000/- | 3987422/- (Spent)3871069/- (Committed) | Ongoing |

| 4. Academic Programs added after receiving the CURIE funds (UG & Above) | | | | | | |
|---|---|---|---|---|---|---|
| Phase | Departments – Wise | Newly Added Programs (Title) | Field of Specialization | Degree Awarded | No of Students In-take | Year |
| 1st | Biotechnology | PhD | Molecular Biology, Functional Genomics, Genetic Engineering, Plant Biotechnology, Tissue Engineering, Cancer Biology, Environmental, Biotechnology. | Nil | 08 | 2020 |
| 2nd | Life Science | PhD | Microbiology, Immunology, Molecular biology, Genetic engineering, Plant Physiology, Animal Physiology, Parasitology, plant taxonomy, env. Microbiology | | 03 | 2020 |
| 3rd | Computer Science | PhD | Cloud Computing, Internet of Things, Artificial Intelligence, Machine Learning, Cyber Security, Network Security, ImageProcessing, | Nil | 07 | 2020 |

| 5. Diploma/ Certificate Programs added after receiving the CURIE funds | | | | | |
|---|---|---|---|---|---|
| Phase | Departments – Wise | Newly Added Programs (Title) | Field of Specialization | No of Students In-take | Year |
| 1st | Biotechnology | Nil | Nil | NA | |
| 2nd | Life Sciences | Industrial Microbiology (MSc.) | | 08 | 2019 |
| 3rd | Computer Science | Advanced Diploma in Computer Applications (ADCA) | Computer Applications | 30 | 2019 |

| 6. Conferences held after receiving the CURIE Grant | | | |
|---|---|---|---|
| Phase | Department-wise | No. of Conferences | Year |
| 1st | Dept. of Biotechnology | 1. National Conference on Life Science and Biotechnology (LIFETECH-2020), 27-28 Feb 2020;<br>2. National Webinar Series on Biotechnology Advances (May-June 2020) | 2020<br>2020 |

| | | | |
|---|---|---|---|
| 2nd | Dept. of Life Sciences | 1. National Conference on Life Science and Biotechnology (LIFETECH-2020), 27-28 Feb 2020<br>2. International Webinar: UnderstandingCOVID-19 Pandemic: Challenges &Opportunities , 29-30th June2020 | 2020 |
| 4th | Computer Science | 1. Springer 4th International Conference on Advanced Computing and Intelligent Engineering - 2019 (ICACIE-2019) [21-23 December 2019] | 2019 |

## 7. Status on Placement due to CURIE Support

| Phase | Department-wise | Year | No. of students in- take | No of Placement |
|---|---|---|---|---|
| Before CURIE | Biotechnology<br>Life Science<br>Computer Science | 2018 | UG-32/PG-32 | UG-Nil/PG-02 |
| 1st | Biotechnology | 2019 | UG-32/ PG-32 | PG-06/ UG-04 |
| 2nd | Life Science | 2019 | 32 | 06 |
| 3rd | Computer Science | 2019 | UG-32/PG-32 | UG-07/PG-Nil |

## 8. Department Wise Sponsored R & D during CURIE

| Department-wise | Name of the PI/Co- PI | Contact Details | | Project | | Field Specialization | Funding Agency |
|---|---|---|---|---|---|---|---|
| | | Mob no. | Email Id | Title | Year of Sanction | | |
| Biotechnology | Dr. Raj Kumar Joshi | 9437684176 | rkjoshi@rdwu.ac.in | Delineating the small RNA networks --- '*Fusarium oxysporum f. sp. cepae'* in *Allium cepa L*. | 2019 | Functional Genomics | DBT, Govt. of India |
| | Dr. Raj Kumar Joshi | 9437684176 | rkjoshi@rdwu.ac.in | Rapid development of NGSbased SNP markers ---(*Allium cepa* L.) | 2020 | Functional Genomics & Molecular Biology | SERB, DST, Govt. of India |
| | Dr. Dillip Kumar Bishi | | dillipkumarbishi@rdwu.ac.in | Gedunin-ZnO nanoparticle-incorporated Poly-L-Lactic acid ----- hepatosphere model | 2019 | Tissue Engineering | SERB, DST, Govt. of India |
| Life Science | -- | -- | -- | -- | -- | -- | -- |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Computer Science | ---- | ---- | --- | ---- | ----- | ---- | ---- |

9. Details of the Academic/Industry Collaborations.

| Phase | Project Name | University Name | | Industry Name | |
|---|---|---|---|---|---|
| | | International | National | International | National |
| 1st | Collaboration on mutual scientific research in the area of Biotechnology and student exchange programme | University of Malaya, Malaysia | Institute of Life Science, Bhubaneswar;<br><br>ICAR-Central Institute ofFreshwater Aquaculture, Bhubaneswar | - | - |
| 2nd | | | Institute of Life Science, Bhubaneswar;<br><br>ICAR-Central Institute of Freshwater Aquaculture, Bhubaneswar | | |
| 3rd | DATALET: An approach to manage big volume of data in cyber foraged environment (Published and available online) | University of California, Davis, USA | Tripura University (A Central University) | SAP Lab | SAP Lab, Bangalore |

10. Educational Improvement

| Phase | Department-wise | Pre- CURIE (In Numbers) | | | | Post- CURIE (In Numbers) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No. of Faculty | PG | Ph.D. | Others | No. of Faculty | PG | Ph.D. | Others |
| 1st | Biotechnology | 07 | 32 | Nil | - | 07 | 32 | 05 | JRF-04 |
| 2nd | Life Sciences | 07 | 32 | -- | -- | 07 | 32 | 03 | -- |
| 3rd | Computer Science | 05 | 32 | Nil | Nil | 05 | 32 | 07 | Project Assistant |

11. Resource Output

| Phase | Department - wise | Name of the faculty | Details of the rewards Received (During the Project Period) in number | | | | | | Technical Skill Improvement (training, workshops) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Award Received | Published Research Papers | H-Index | Impact Factor | PhD | Patents | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Before CURIE | | | | | | | | | |
| 1st | Biotechnology | Prof. Sasmita Mohanty | | 05 | 16 | Yes | Yes | - | |
| | | Dr. R K Joshi | | 05 | 17 | Yes | Yes | -- | Workshop on teaching methodology |
| | | Dr. Sujata Mohanty | | 03 | 13 | Yes | Yes | -- | Workshop on teaching methodology |
| | | Dr. D K Bishi | | 02 | 08 | Yes | Yes | -- | Workshop on AI |
| | | Dr. S K Raul | | 02 | 03 | Yes | Yes | -- | Workshop on teaching methodology |
| | | Dr. M. Mohanty | | 02 | 14 | Yes | Yes | -- | Workshop on teaching methodology |
| | | Dr. T Bhotra | | 01 | 03 | Yes | Yes | -- | Workshop on teaching methodology |
| 2nd | Life Science | Prof CCRath | | 03 | | yes | Yes | | |
| | | Dr. S. Singh | | 05 | | Yes | Yes | | |
| | | Dr. S. Rath | | 03 | | Yes | Yes | | |
| | | Dr. N. Kaur | | - | | Yes | Yes | | |
| | | Dr. M. | | 01 | | Yes | Yes | | |
| | | Kumbhar | | | | | | | |
| | | Dr. AP Das | | 05 | | yes | Yes | | |
| | | Ms. J. Tudu | | 01 | | Yes | | | |
| 3rd | Computer Science | 1. B.Pati<br>2. C. Panigrahi | Nil<br>Nil | 03<br>04 | 16<br>14 | Yes<br>Yes | Yes<br>Yes | ----<br>--- | Yes<br>Yes |

| 12. Infrastructure facilities (Networking Facilities) added after receiving the CURIE Grant | | | | | |
|---|---|---|---|---|---|
| Phase | Department - wise | Name of the facilities improved | Year | Maintenance Grant Received | |
| | | | | Yes | No |
| 1st | Biotechnology | Development of Bioinformatics facility (In process) | 2020 | - | |
| 2nd | Life Science | In process | 2020 | -- | -- |
| 3rd | Computer Science | In Process | 2020 | ---- | ---- |

| 13. Equipment facilities added after receiving the CURIE Grant | | | | | |
|---|---|---|---|---|---|
| Phase | Department-wise | Name of the Equipment | Procurement Year | Maintenance Grant Received | |
| | | | | Yes | No |
| 1st | Biotechnology | PCR Machine<br>Water purification system<br>-20 deep freezer<br>Cooling centrifuge<br>Spectrophotometer<br>Vertical Gel Electrophoresis System<br>Horizontal Gel System | 2020 | Yes | |
| 2nd | Life Science | -do- | 2020 | Yes | |
| 3rd | Computer Science | Cloud Computing Software<br>Internet of Things KIT | 2020 | Yes | |

| 14. IMPACT ON UNIVERSITY RANKING | |
|---|---|
| Before CURIE | |
| Post CURIE | |

| 15. CURIE PROGRAMME RATING | | | | | |
|---|---|---|---|---|---|
| Your Satisfaction Rating on the Programme/ Scheme: | Excellent | Very Good | Good | Average | Not Satisfied |

| | |
|---|---|
| Problems Experienced (other than Grants related): | NA |
| Overall experience:<br><br>Success Stories and Best Practices: | Good |
| Suggestions | ---- |

| 15. CURIE PROGRAMME RATING | | | | | |
|---|---|---|---|---|---|
| Your Satisfaction Rating on the Programme/ Scheme: | Excellent | Very Good | Good | Average | Not Satisfied |
| Problems Experienced (other than Grants related): | NA | | | | |
| Overall experience:<br><br>Success Stories and Best Practices: | Good | | | | |
| Suggestions | ---- | | | | |