Women in Science and Technology: Nepal’s Experience

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at

Conference on

Second Summit of the South Asian Science Academies

&

INSA-AASSA Joint Workshop on Women in Science Education and Research

India
Country of Sagarmatha (Mount Everest)  
(Crown of Mountains)

Women in Science Education and Research in Nepal: an introduction
Status of female in Nepal: From past to present

- History of Nepal, Female personalities related to Royal family had played vital role to rise the nation and nationalities by the means of political, social, cultural and religious sectors. There are no examples in the history of Nepal where female personalities had directly ruled over the country as the head of the state. Though some females at different period had been strongly involved in the nepalese politics as a second person.

- 1958 AD (2015 BS), the female minister was nominated in the cabinet formed by the elected government for the first time in Nepal.
After the restoration of democracy in 1989 AD (2046 BS), the no. of female in politics has increased, though their role in decision making remains poor in the male dominant leaderships of the political parties.

The interim constitution of Nepal- 1989 AD (2064 BS) has made the provision of including 33% female participants in political parties and the parliament but it is lacking in the country.

Women in development have been accepted since the 6th plan as a National Policy. After the restoration of multi-party system in 1989 AD (2046), policy makers are giving due importance to uplift the status of women. A separate ministry to look after the welfare of women has been established especially after the World Women Conference held in Beijing in 1995. Thus the question of women empowerment has been brought into limelight.
Education status of Nepal: Past experience

Authoritarian Ranas rule- 1950 AD

Education was restricted, considered as a threat of inciting insurgency. So there was limited number of schools for educating Kathmandu based elite. Only in 1951, after more than hundred years of Rana dynasty, education was recognized as a right of people. According to USAID report, about 98% of the population was illiterate with just 300 graduates in the entire country.
In 1960 AD, the literacy rate was 8.9%. During the period of Panchayat system (Single party system), the literacy rate has not increased significantly according to the country’s need. The policy makers of the system had not invested in the education sectors for which they had been approved funds from the donor agencies.
Education status of Nepal: Present scenario

Population census-2011
Female: 51.5%

Overall literacy rate:
54.1% in 2001
65.9% in 2011

The literacy rate:
Male: 75.1%
Female: 57.4%

Kathmandu—highest literacy rate 86.3%
Rautahat—lowest 41.7%
Literacy rate - critical indicator of the development of the nation. In this rapidly changing Techno-Driven world, the economic development is easily impeded if the nation lacks literate people.

Greater disparity among literacy is that sons are still considered as the future care taker of their parents.
Daughters - household duties from their early age. If the schools are nearby, they may probably have chances to attend after finishing their chores in time. If the schools are too far, there is no chance for the opportunity. The statistics in literacy rate is based on geographic location of Nepal.
Women in Nepal receive less degrees in engineering, maths, physical science, computer and information sciences. In contrast, women continue to earn the largest degree at all levels in the fields they have traditionally dominated such as health professions such as nursing, physical therapy, health administrations and education.
Some present facts

In the last **10 years** the number of female in microbiology discipline has increased dramatically in the country who have potential role in the infection control system in the hospitals, monitoring of the diagnostic system of the infectious diseases, environment management and public health, agricultural development and in the food quality control & Food & Water security.

Still females in Nepal have preference in medicine, microbiology, information technology and engineering.
## S & T Human Resources in Nepal

<table>
<thead>
<tr>
<th>SN</th>
<th>Subject</th>
<th>Number of Persons</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Engineering</td>
<td>213</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Natural Science</td>
<td>472</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>Medical Science</td>
<td>86</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Agriculture</td>
<td>272</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Forestry</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Food Technology</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Total Number</td>
<td>1,066</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Regmi et al, 2010
Figure 1: Middle Level Human Resources Produced by CTEVT, 2010

- Health: 85%
- Agriculture: 6%
- Engineering: 9%

Source: Regmi et al, 2010
Figure 2 Human Resources by Gender and Sectors, 2010

Source: Regmi et al, 2010
### Figure 3 Qualifications of Human Resources, and Gender

<table>
<thead>
<tr>
<th>Sector</th>
<th>Level</th>
<th>Doctorate</th>
<th>Master</th>
<th>Bachelor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>102</td>
<td>1,089</td>
<td>1,510</td>
<td>2,701</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>23</td>
<td>125</td>
<td>208</td>
<td>356</td>
</tr>
<tr>
<td>Government</td>
<td>Male</td>
<td>214</td>
<td>733</td>
<td>256</td>
<td>1,233</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>30</td>
<td>161</td>
<td>52</td>
<td>243</td>
</tr>
<tr>
<td>Higher Education</td>
<td>Male</td>
<td>32</td>
<td>228</td>
<td>97</td>
<td>357</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>95</td>
<td>84</td>
<td>180</td>
</tr>
<tr>
<td>Business</td>
<td>Male</td>
<td>2</td>
<td>138</td>
<td>104</td>
<td>244</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>26</td>
<td>23</td>
<td>49</td>
</tr>
<tr>
<td>Private and Nonprofit</td>
<td>Male</td>
<td>32</td>
<td>228</td>
<td>97</td>
<td>357</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>95</td>
<td>84</td>
<td>180</td>
</tr>
<tr>
<td>Others</td>
<td>Male</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>Male</td>
<td>383</td>
<td>2194</td>
<td>1,969</td>
<td>4,546</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>54</td>
<td>409</td>
<td>369</td>
<td>832</td>
</tr>
<tr>
<td>Grand Total</td>
<td>Male</td>
<td>437</td>
<td>2,603</td>
<td>2,338</td>
<td>5,378</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>15.4%</td>
<td>16.4%</td>
<td>16.7%</td>
<td>33.5%</td>
</tr>
</tbody>
</table>

Source: Regmi et al, 2010
Figure 4: Number of Persons by Gender

Source: Regmi et al, 2010
Figure 5: Human Resources by Gender and Duties, 2010

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>1248</td>
<td>229</td>
</tr>
<tr>
<td>Researchers</td>
<td>4724</td>
<td>399</td>
</tr>
<tr>
<td>Technicians</td>
<td>10214</td>
<td>1839</td>
</tr>
<tr>
<td>Teaching staff</td>
<td>2927</td>
<td>641</td>
</tr>
<tr>
<td>Support staff</td>
<td>3695</td>
<td></td>
</tr>
</tbody>
</table>

Source: Regmi et al, 2010
<table>
<thead>
<tr>
<th>Items</th>
<th>Total No.</th>
<th>male</th>
<th>female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>413 (100%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>219 (53%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>194 (46.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Microbiology</td>
<td>280</td>
<td>141 (50.3%)</td>
<td>139 (49.9%)</td>
</tr>
<tr>
<td>Agriculture Microbiology</td>
<td>19</td>
<td>11 (57.8%)</td>
<td>8 (42%)</td>
</tr>
<tr>
<td>Environmental Microbiology</td>
<td>72</td>
<td>44 (61.1%)</td>
<td>28 (38.8%)</td>
</tr>
<tr>
<td>Food Microbiology</td>
<td>42</td>
<td>23 (54.7%)</td>
<td>19 (45.3%)</td>
</tr>
</tbody>
</table>

CDM, TU 2013
Gender Parity Index (GPI) – 0.62% where women is lagging behind by more than 27% (www.UNESCO.org)
Role of Academies
♦ Academies can give a major thrust world over to create knowledge-based society with full involvement of women scientists and technologists; create a strong sustainable Sc & Tech base which will affect all the social levels. This intellectual capital of half of the human resource on the planet Earth should be an integral part of the accelerated S&T drive towards progress, peace and happiness of humanity.
Nepal Academy of Science and Technology (NAST) Female Staffs

Female 40%
NAST Academicians - 44

11.3% male
39 females
88.6%
Gender Ratio of Professionals

- Male: 75%
- Female: 25%

Gender Ratio of Professional staff

Five Years (2013/14-2017/18) Strategic Plan, Research Centre for Applied Science and Technology, Tribhuvan University, Kirtipur, Nepal (July 2013)
Why women in Sc and Tech?

1. To increase women’s financial independence and security.
2. To understand the modern world and to participate in decision making on many social and political issues.
3. To educate and enable full development of natural talents and interest.
4. To increase National productivity as a workforce trained in S&T. Otherwise become a waste of human capital if such training is not given to more than 50% of the population.

5. To empower women by improving their ability to access information, education and services such as market prices for crops, professional development opportunities and tools to promote their health and families.
How to mobilize skilled women in the development of country?

1. 2/3rds of women in Nepal are engaged in agriculture. More than half of the country’s food is produced by women. Research based scientific knowledge in agriculture and food production among the women will increase the gross domestic product (GDP) of the country.

2. Skill development improves output, quality, diversity and occupational safety and improves health, thereby increasing incomes and livelihoods of the poor.

3. It also helps to develop social capital and strengthens knowledge about informal sector associations, rural organizations and governance.
4. According to human capital theory-
   Better educated agricultural individuals give rise to higher productivity

5. Skilled women in Nepal can be mobilized in the environmental sector for minimizing environmental pollution, utilization of Nepal’s vast biodiversity, innovation of environmental friendly techniques and tools.
6. Mobilization in health sector especially for the reduction of maternal and infant mortality.

7. Mobilization in the innovation of information technology.

8. Mobilization of skilled women in the social security which is worst in Nepal.
The **Women in Science education & Research** has recommended an extraordinary and extensive use of knowledge for the welfare of the humankind. Furthermore it calls for gender equity and empowerment of women.
Obstacles?

a. Cultural and social attitudes are often unfavourable to women’s participation in the fields of S&T, which limits their opportunities in these areas to some extent.

b. Due to ancient notion, they believe science subject are very difficult for Female students, can only be managed by Male students.

c. The female in this field lack role models, career guidance from fellow women because this has been a Male dominated domain for a number of years.
d. S&T courses are more costly than other courses without a practical component.

e. To get higher education in S&T Female have to leave home. But if educational institutions are not available nearby their residence leaving home is constrained by economic and social obstacles.

f. Women are often financially dependent on men or do not have control over economic resources, which makes accessing S&T services more difficult.
What should we do?

1. Encouraging female in practical based S&T education from the school level.

2. Aware about their role:
   - as a potential leader in the society.
   - as to incline them towards the economic development of the country through S&T education.
   - to make their life independent i.e. alleviation of male dependency on the society as a whole.
   - to change the radical thinking of male dominance.
3. Policy implementation of the reservation system for marginalized group of females.

4. Political commitment for the participation of females in the national development.

5. Allocation of sufficient funds for the upliftment of S&T in the country.
Conclusion

Half of the humankind is comprised by Women, nonetheless the number in mathematics, physical sciences, engineering, is modest.

Moreover professional women seldom reach the apex of the hierarchy in academic and research institutions.
Encourage Women scientists and technologists to participate efficiently and effectively in the development of the country.

S&T can empower women scientists and technologists and to use their skill and knowledge to empower women and improve the livelihood of women in rural and urban areas.
Women in Science and Technology Nepal (WIST), - established in 1992 as a non profit, non governmental, professional organization to empower women scientists and technologists and to use their skill and knowledge to empower women and improve the livelihood of women.
WIST helps to bridge the gap in information and knowledge between educated women and women in rural areas. So that all can effectively and efficiently participate in economic development.
Upliftment – Women in S&T

Third Annual Women Scientists’ Conference was held in New Delhi on Sep 13, 2011

First Summit of the South Asian Science Academies was held on September 2012

First UN Conference Mexico 1975
Beijing Declaration 1995
UNU-IAS report on women and science 2005
TWAS Standing Committee on Women 2005
UNESCO report 2006
Challenges

- Gender equality
- Access to information
- Retention of Females in leaky pipeline, specially at the tertiary and mid-career level
Women, Science and Technology and Climate Change, Kathmandu on June 17-18, 2008

Women are more vulnerable to climate change and 85% of women die from climate-induce disaster.
Thus women have key role to play in a board range of activities related to understanding, mitigation and adapting to climate change.
“When a woman is educated, whole family is educated”
Thank you

Tribhuvan University, Nepal