

# CHAPTER 10

## STEM PATHWAYS: ENVIRONMENTAL STUDIES

### WHAT ARE ENVIRONMENTAL STUDIES?

The main purpose of studying and working in Environmental Studies is to understand and apply knowledge of the scientific aspects of the environment and the procedures required to establish an environmentally sustainable society. It also involves developing an understanding of how physical, economic, social and technological factors affect the environment. Environmental Studies is comprised of Land, Parks and Wildlife Management; and Environmental Studies, n.e.c. (not elsewhere classified)(ABS, 2001).

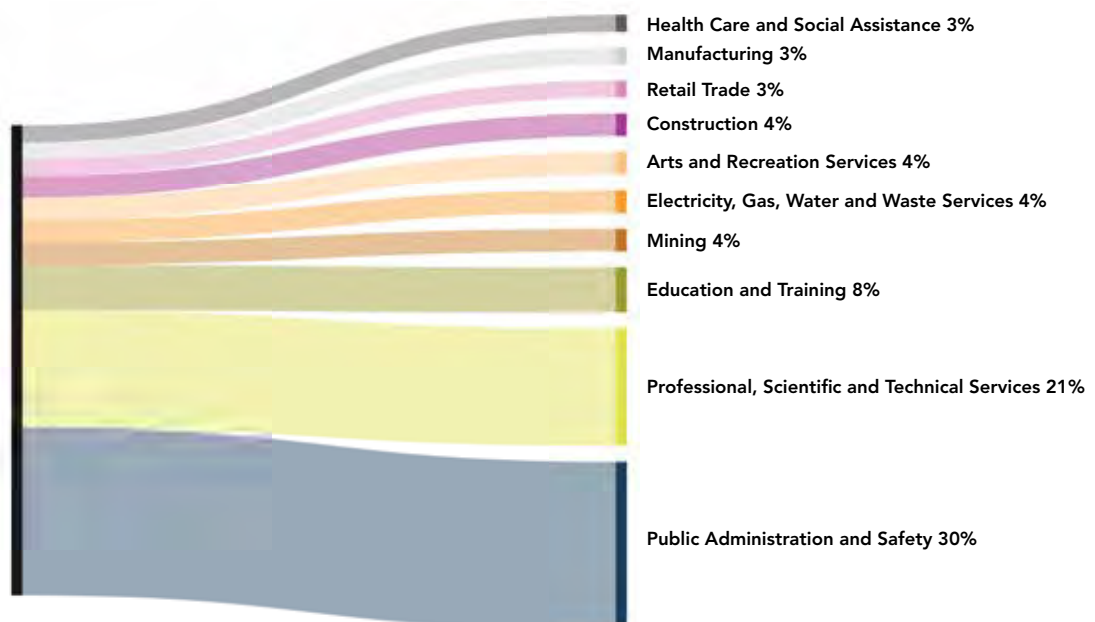
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## STEM PATHWAYS: ENVIRONMENTAL STUDIES

### KEY FACTS

- 1** In 2011, there were 24 884 Environmental Studies graduates, spread equally between males and females.
- 2** Graduates in this field were comparatively young—54 per cent of females and 39 per cent of males were younger than 35 years old.
- 3** The private sector employed 56 per cent of all Environmental Studies graduates—varying from 58 per cent of bachelors to 34 per cent of doctorates.
- 4** Almost one third worked in Public Administration and Safety (30 per cent), and one fifth in Professional, Scientific and Technical Services (21 per cent).
- 5** Environmental Studies graduates most commonly worked as Professionals (53 per cent) and Managers (17 per cent).
- 6** At a more detailed level, the most common occupations were as Environmental Scientists (27 per cent).
- 7** Having a doctorate in Environmental Studies increased the likelihood of earning over \$104 000 per year from 12 per cent to 24 per cent compared to a bachelor qualification.

Top ten industry sectors of employment for Environmental Studies graduates



## HOW MANY ENVIRONMENTAL STUDIES GRADUATES ARE THERE IN AUSTRALIA?

In 2011, there were 24 884 Environmental Studies graduates (bachelor and above) in Australia. Of these, 73 per cent had qualifications in Environmental Studies, n.e.c; and 27 per cent in Land, Parks and Wildlife Management. There were roughly similar numbers of male (12 208) and female (12 676) graduates. Fifteen per cent of graduates (3689) were either not in the labour force or were unemployed (12 and 3 per cent, respectively).

Over one third of Environmental Studies graduates (7104 individuals, 34 per cent) had post graduate qualifications, 4 per cent of which had doctorates.

## HOW OLD IS THE ENVIRONMENTAL STUDIES GRADUATE WORKFORCE?

Over half (54 per cent) of female graduates in the workforce were younger than 34 years; and only 16 per cent were older than 45 years. In contrast, 39 per cent of Non-STEM educated females in the workforce were younger than 34 years; and 24 per cent were older than 45 years (Figure 10.1).

Male graduates who were employed showed a similar, but slightly younger age distribution compared to their Non-STEM-qualified male counterparts.

## WHERE DO ENVIRONMENTAL STUDIES GRADUATES WORK?

The private sector employed 56 per cent of all Environmental Studies graduates. This proportion varied depending on level of qualification as follows:

- ▶ Bachelor level: 58 per cent
- ▶ Postgraduate level: 52 per cent
  - Masters: 56 per cent
  - Doctorate: 34 per cent

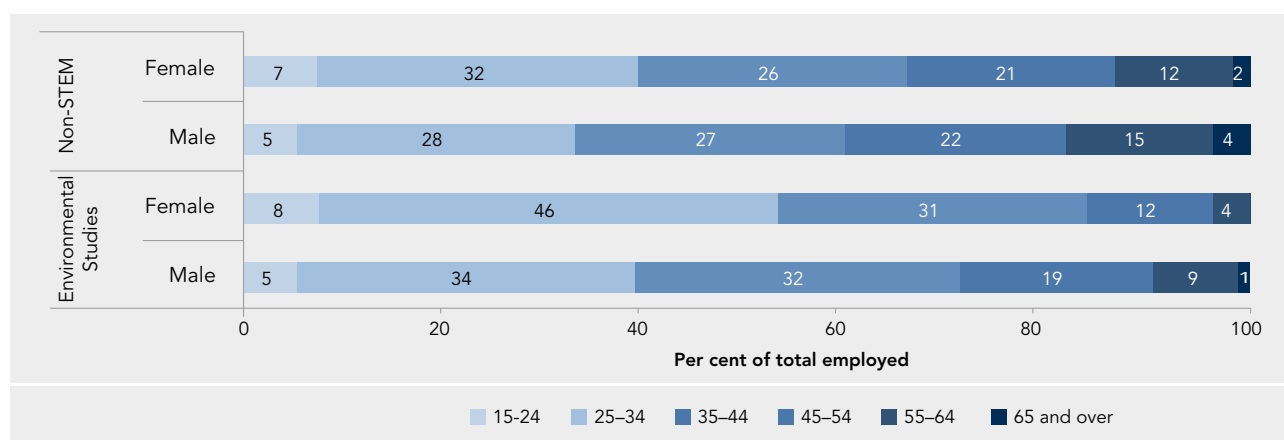
## INDUSTRY SECTORS OF EMPLOYMENT

Industries are classified in four levels (ABS, 2006a):

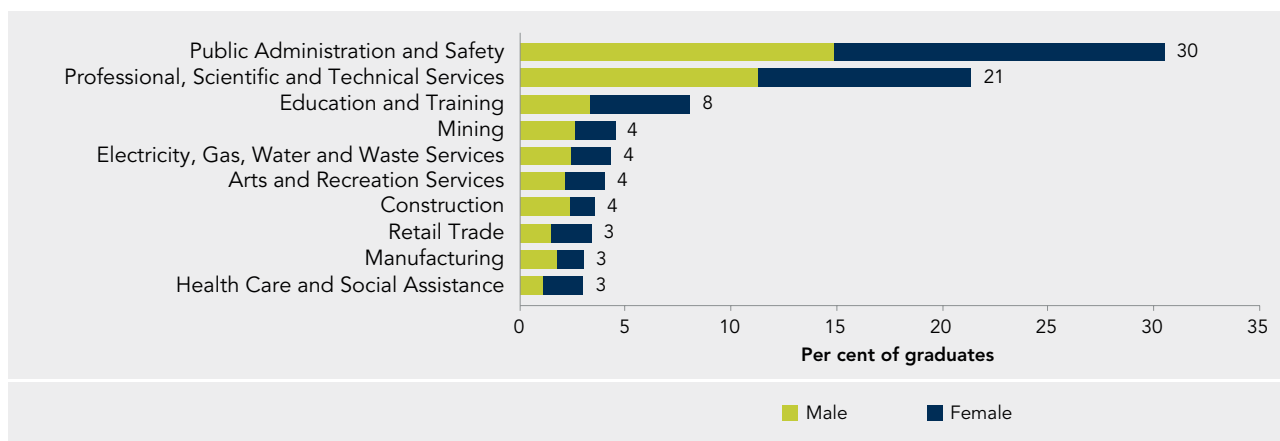
- ▶ Divisions (the broadest level)
- ▶ Subdivisions
- ▶ Groups
- ▶ Classes (the finest level)

See Appendix B for a detailed list.

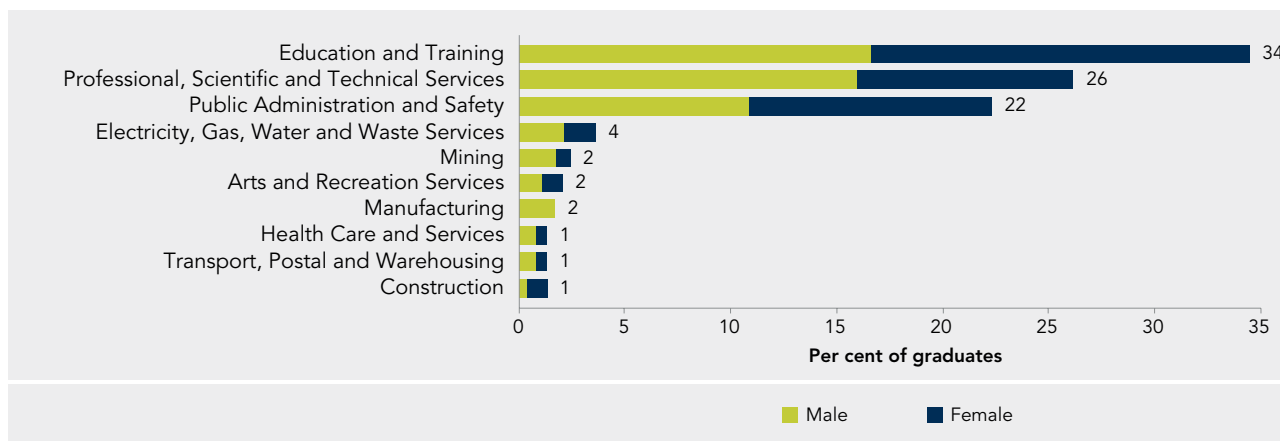
**Figure 10.1: Age distribution of employed Environmental Studies graduates at bachelor level and above, by field and gender**



**Figure 10.2: Top ten industry divisions of employment for Environmental Studies graduates with qualifications at bachelor level and above, by gender**



**Figure 10.3: Top ten industry divisions of employment for Environmental Studies doctoral graduates, by gender**



Approximately one third (30 per cent) of graduates worked in the Public Administration and Safety industry; and one fifth (21 per cent) in Professional, Scientific and Technical Services (Figure 10.2).

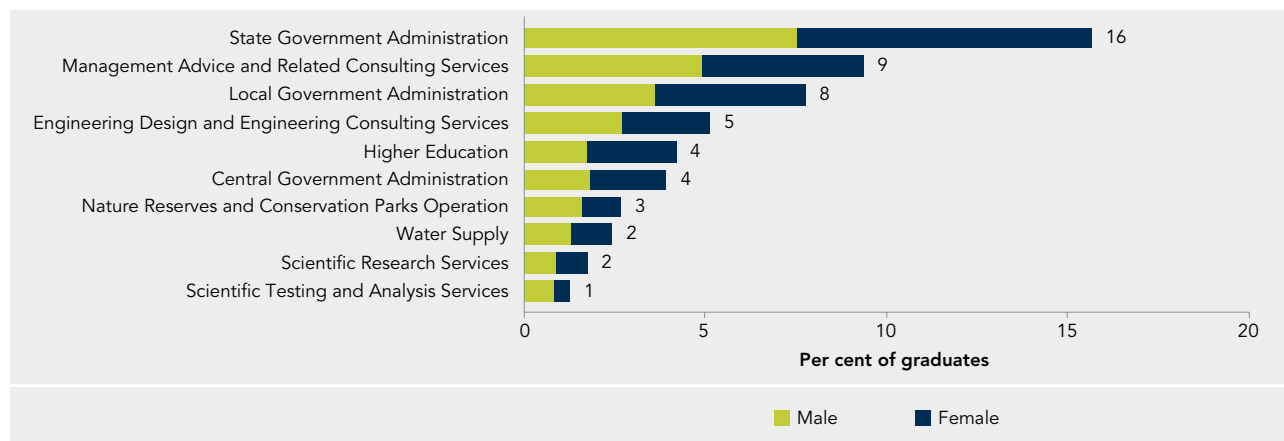
Doctorate holders worked in the same top three industry divisions as the total bachelor and above population; however the percentages in each were different (Figure 10.3). For example, only eight per cent of the total Environmental Studies graduate workforce were employed in the Education and Training division; compared to over one third (34 per cent) of doctorate holders.

At a more detailed level, the total graduate population was spread across a much wider range of industries than those with doctorates. In addition, while the top ten industry classes were the same for both the whole graduate cohort

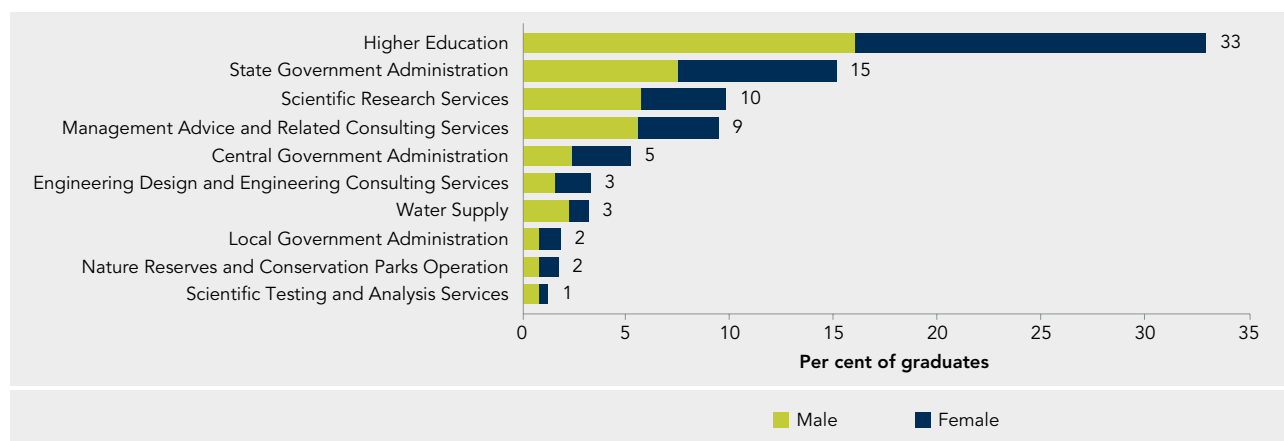
and for those with doctorates they were in a very different order (Figure 10.4 and Figure 10.5). The largest difference was in Higher Education (an industry class of Education and Training), which employed only 4 per cent of the total cohort, but one third of the doctoral graduates. The industry class of State Government Administration was the top destination for graduates as a whole at 16 per cent, and employed a similar percentage of doctorates, at 15 per cent.

There was an overall parity in the number of male and female graduates employed in each industry class. In some industries, such as Higher Education and Central Government Administration, slightly more females were employed compared to males. This parity did not alter significantly for individuals with doctorates.

**Figure 10.4: Top ten industry classes of employment for Environmental Studies graduates with qualifications at bachelor level and above, by gender**



**Figure 10.5: Top ten industry classes of employment for Environmental Studies doctoral graduates, by gender**



## WHAT ARE THE OCCUPATIONS OF ENVIRONMENTAL STUDIES GRADUATES?

Over half of all Environmental Studies graduates were employed as Professionals (53 per cent), and 17 per cent were Managers. Among the Professionals, the most common sub-groups of occupation were:

- ▶ Design, Engineering, Science and Transport Professionals (69 per cent)
- ▶ Business, Human Resource and Marketing Professionals (12 per cent)
- ▶ Education Professionals (8 per cent).

Among the Managers, the most common sub-groups of occupation were:

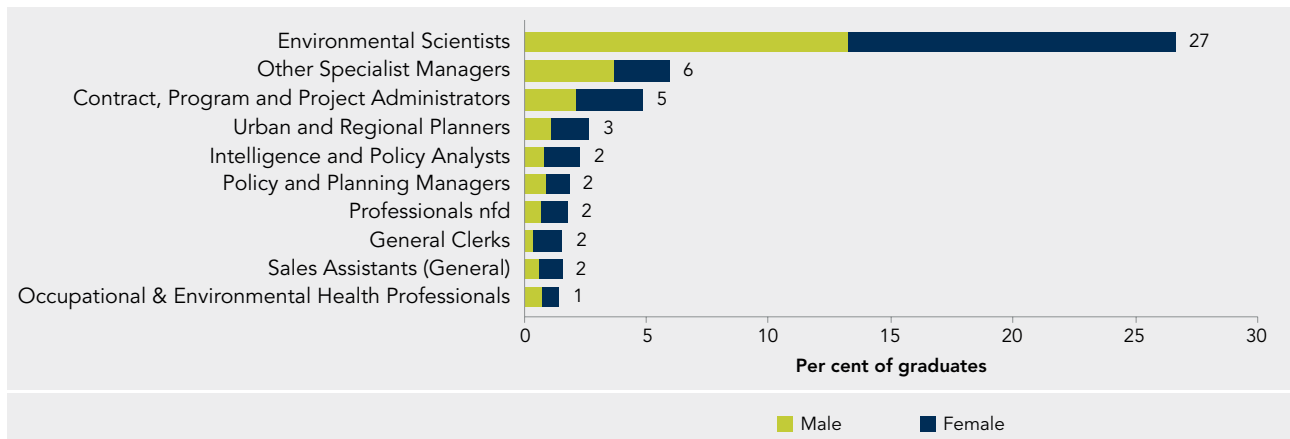
- ▶ Specialist Managers (71 per cent)
- ▶ Hospitality, Retail and Service Managers (12 per cent)
- ▶ Chief Executives, General Managers and Legislators (8 per cent).

Occupations are classified in five levels (ABS, 2013):

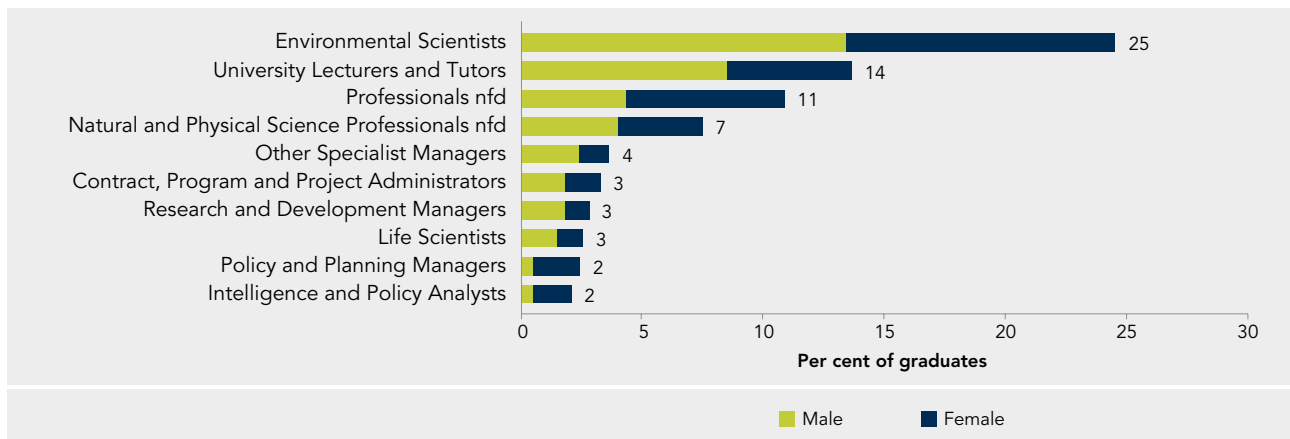
- ▶ Major group (broadest level)
- ▶ Sub-major group
- ▶ Minor group
- ▶ Unit group
- ▶ Occupation (most detailed level)

See Appendix C for a detailed list.

**Figure 10.6: Top ten unit group level occupations of Environmental Studies graduates with qualifications at bachelor level and above, by gender**



**Figure 10.7: Top ten unit group level occupations of Agricultural Science doctoral graduates, by gender**



The most common unit level occupation by a large percentage was Environmental Scientists (27 per cent), followed by Other Specialist Managers (6 per cent) (Figure 10.6)

### ARE THE OCCUPATIONS FOR ENVIRONMENTAL STUDIES DOCTORATE HOLDERS DIFFERENT FROM BACHELOR DEGREE HOLDERS?

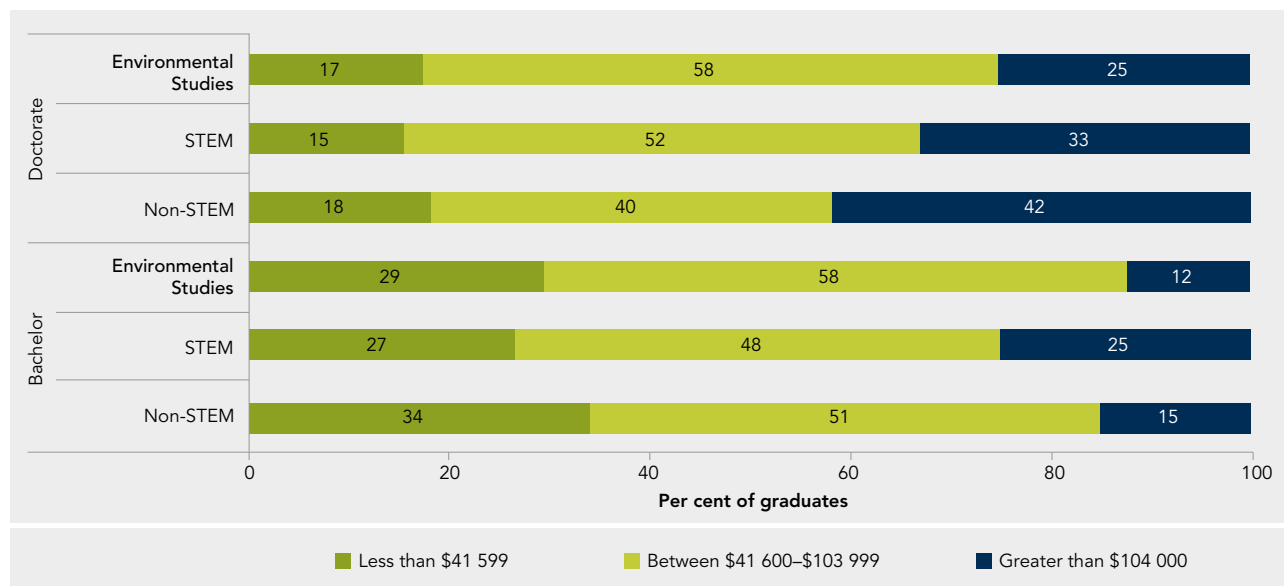
Most Environmental Studies doctorate holders were employed as Professionals, followed by Managers (76 and 14 per cent of graduates, respectively). The private sector employed one third of all Environmental Studies doctorate holders; however, among the doctorate holders employed as Professionals, only 30 per cent were employed by the private sector.

At the more detailed unit level, one quarter of doctorate holders were employed as Environmental Scientists, while 14 per cent were University Lecturers and Tutors and a further 11 per cent were Professionals, n.f.d (Figure 10.7).

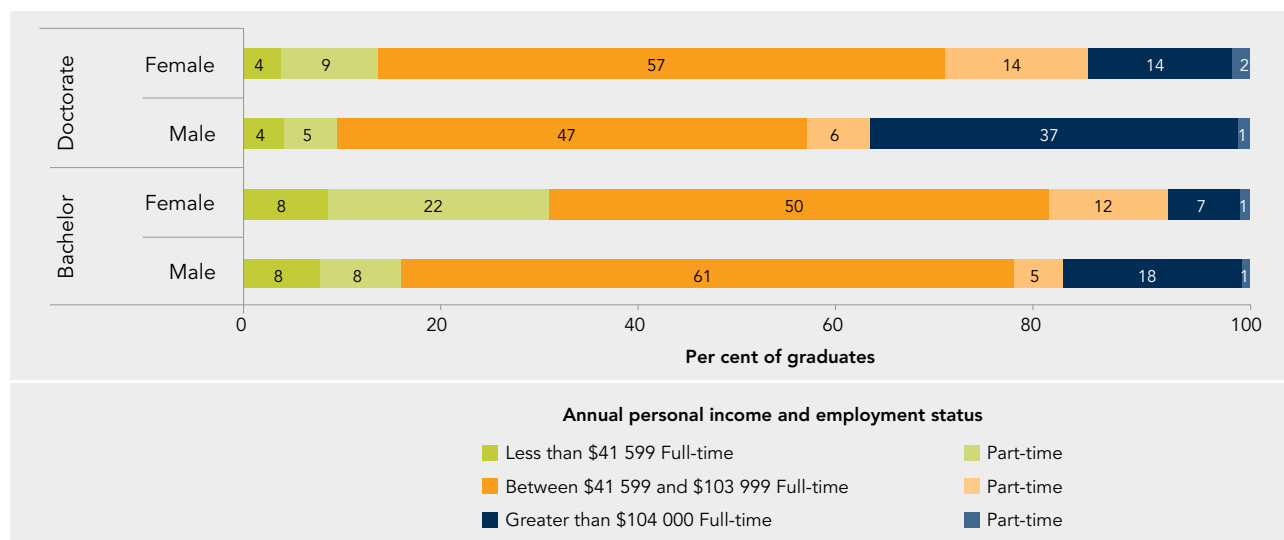
### ARE ENVIRONMENTAL STUDIES GRADUATES HIGH EARNERS?

Fewer Environmental Studies graduates earned an income in the highest bracket (more than \$104 000) compared to STEM and Non-STEM graduates (Figure 10.8). At the bachelor level, 12 per cent of graduates earned an income in the highest bracket, which was less than half the proportion of STEM graduates, and comparable to the proportion of Non-STEM graduates (25 and 15 per cent, respectively).

**Figure 10.8: Personal annual income of graduates, by field and level of qualification**



**Figure 10.9: Personal annual income of Environmental Studies graduates working full-time and part-time, by gender and level of qualification**



A higher proportion of Environmental Studies doctorate holders had an income in the highest bracket, but this was still less than that for STEM and Non-STEM, at 25, 33 and 42 per cent, respectively.

Income was dependent on gender and full-time or part-time employment, with more men and more full-time graduates in the higher income brackets (Figure 10.9). More than twice the proportion of male than female graduates had an income above \$104 000 at both the bachelor and doctorate level of qualification.

Figure 10.10: Percentage of bachelor level graduates earning greater than \$104 000 annually, by field, gender and age group

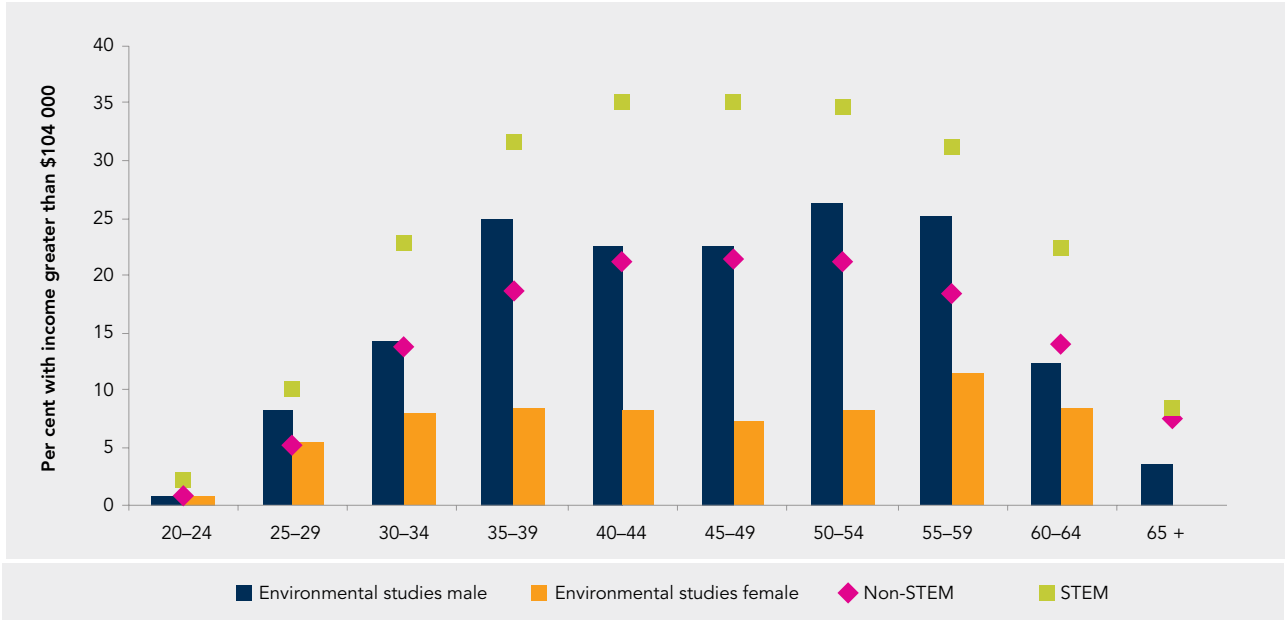
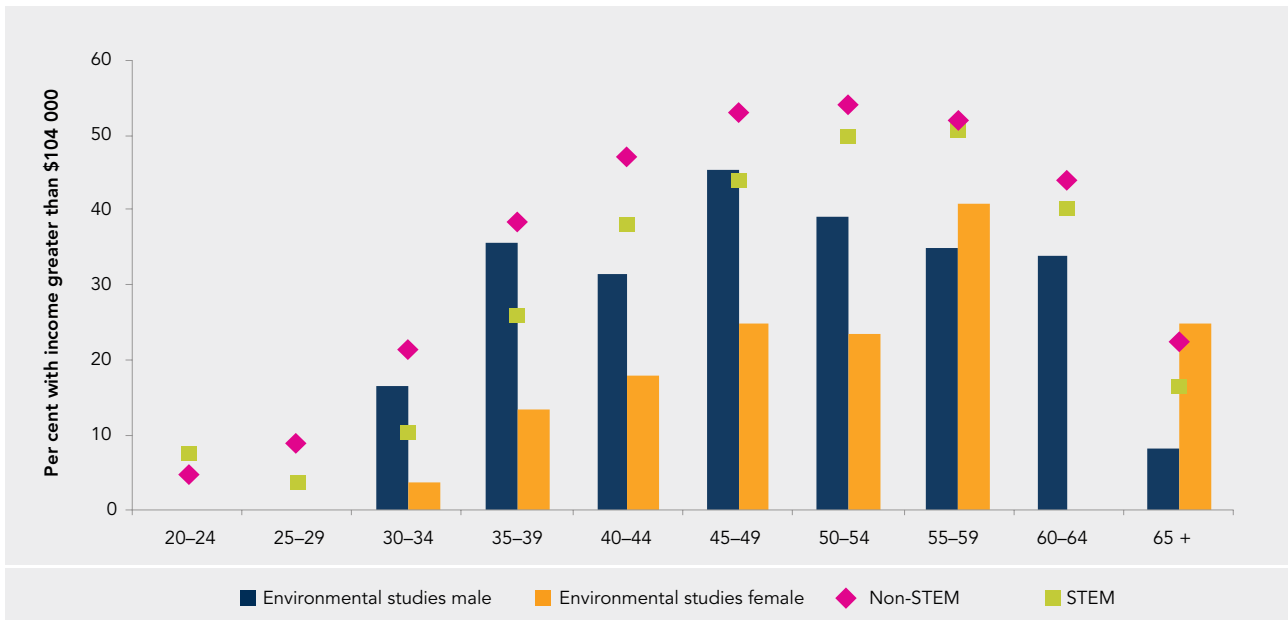


Figure 10.11: Percentage of doctoral level graduates earning greater than \$104 000 annually, by field, gender and age group







Around one quarter of male bachelor graduates had earnings in the highest bracket between the ages of 35 to 59, peaking at a maximum of 26 per cent at 50 to 54 (Figure 10.10). In comparison, fewer than 10 per cent of female graduates reached the highest bracket across all age groups, except for between the ages of 55 to 59, where 12 per cent earned over \$104 000.

At the doctorate level, a higher proportion of male Environmental Studies graduates between the ages of 30 to 39 and 45 to 49 had an income in the highest bracket compared to the total STEM cohort (Figure 10.11). A lower proportion of female doctorate graduates reached the highest bracket at all age groups except for between the ages of 55 to 59 and above 65 (however only 12 individuals were in this age cohort).