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Making Value for Society

ASEE
AMERICAN SOCIETY FOR
ENGINEERING EDUCATION

Making Value for Society

Career Advancement through Academic Commercialization:

Acknowledging and Reducing Barriers for Women Engineering Faculty

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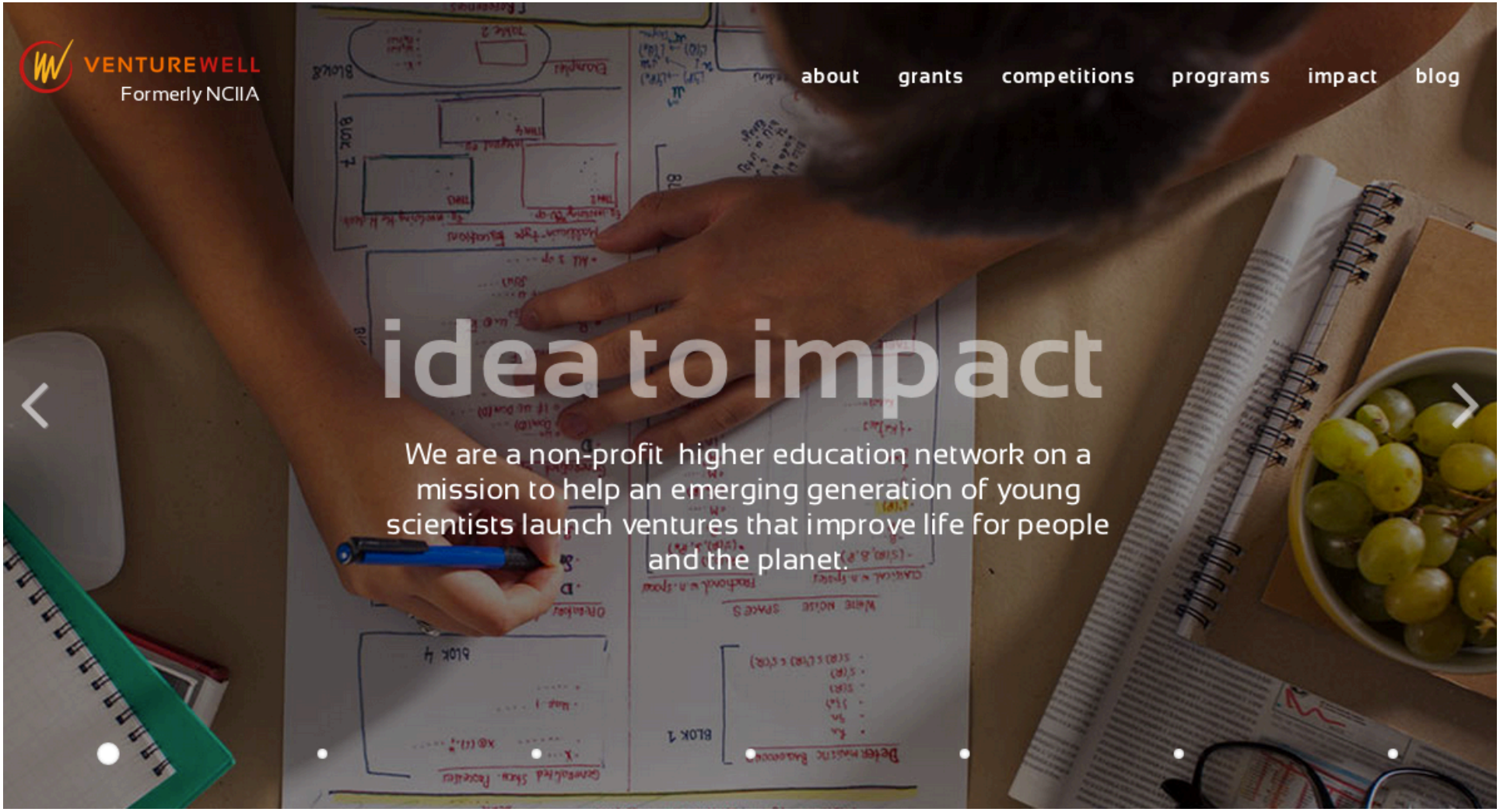

VENTUREWELL
Formerly NCIIA
about
grants
competitions
programs
impact
blog
idea to impact
We are a non-profit higher education network on a mission to help an emerging generation of young scientists launch ventures that improve life for people and the planet.

Diversity > Homogeneity (Page, 2007)

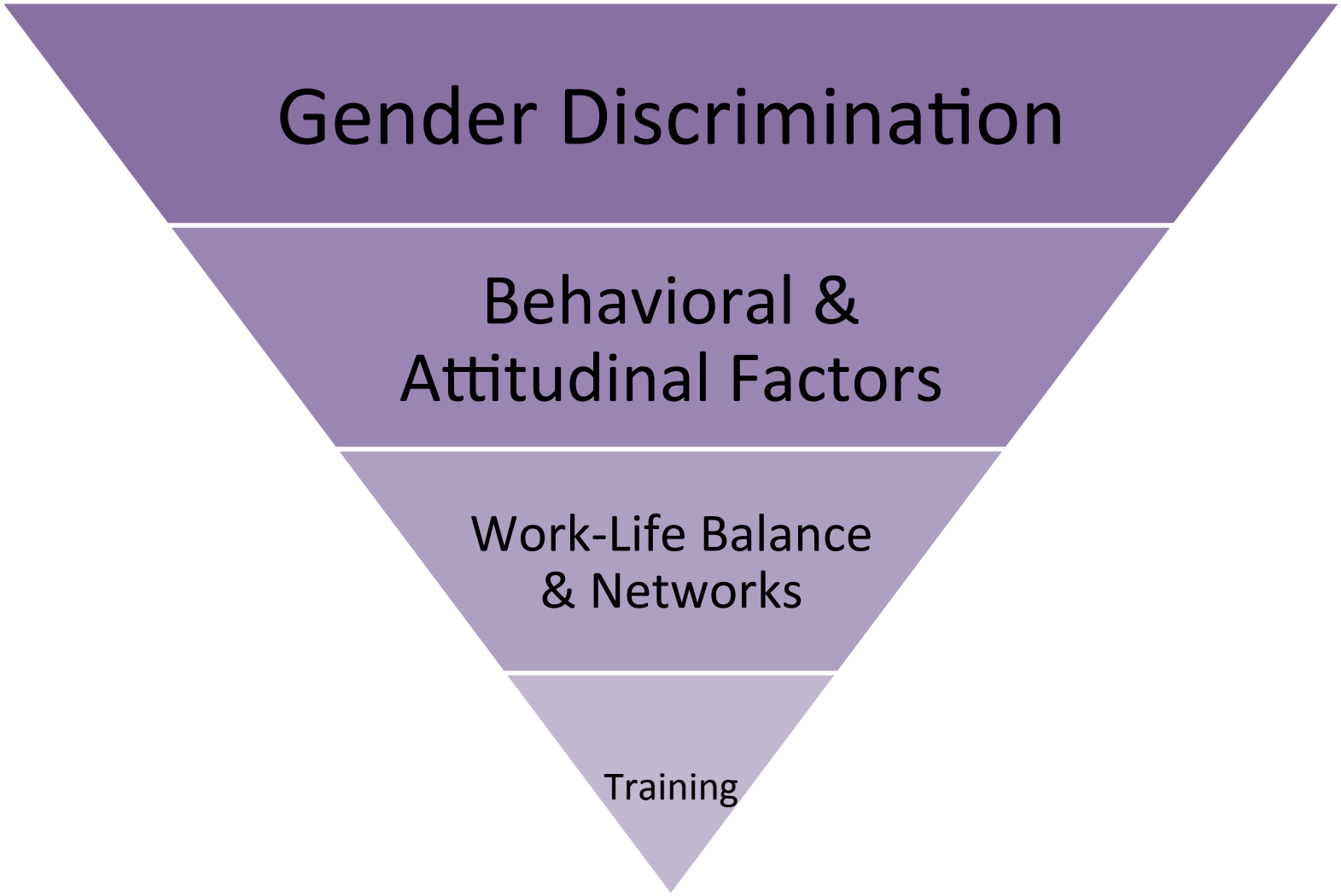
- Women owned companies…
  - **Grow 2X** faster
  - Bring in **$3 trillion annually**
  - Produce **23 million jobs**

- Women's inventions address…
  - Health, poverty, and education

(Center for Women's Business Research, 2009; Rosser, 2009; Donna et al. 2013)

Activity	% Women Involved
Venture Founders	12%
Engineering Workforce	15%
Full Professor in Engineering	9%
Tenured and Tenure Track Engineering Faculty Combined	17%
Associate Professors of Engineering	16%
Assistant Professors of Engineering	23%
Doctorate in Engineering	22%

(Census Bureau, 2013; Yoder, 2014; Fogel, 2013; National Center for Education Statistics, 2012; NSF, 2015)


Gender Discrimination
Behavioral &
Attitudinal Factors
Work-Life Balance
& Networks
Training

Gender Discrimination

Resource Discrimination:

Differences in salary, laboratory size, funding, award nominations, startup packages, etc. (Census, 2013; MIT, 1999)

Negative Organizational Climate:

Perceptions of the organization's policies, practices, and procedures.

(Callister, 2006; Fox, 2010; Settles, Cortina, Malley, & Stewart, 2006)

Sexual Harassment:

Happens more frequently in workplaces where there are power disparities between lower and upper levels of the organization.

(Ilies, Hauserman, Schwochau, & Stibal, 2003)

Behavioral & Attitudinal Factors

Entrepreneurial Self-Efficacy:

Women in science, w/o relevant training tend to underestimate their skills in relation/comparison to men with comparable qualifications
Wilson, Kickul & Marlino (2007).; Zhao, Seibert, & Hills (2005)

Risk Aversion:

Women are more risk averse, especially when it comes to finances.
(Charness & Gneezy, 2012; Ranga& Etzkowitz, 2010)

Productivity:

When external factors are controlled for, men and women faculty have similar rates of productivity.
(Whittington& Smith-Doerr, 2005; Colyvas et. Al, 2012; Fox & Colatrella, 2006; Shauman & Xie, 2003)

Work-Life Balance & Networks

"…[women scientists] are faced with the dilemma of synchronizing the often-conflicting demands of three clocks: the biological clock, the career clock (as in timetables for tenure) and a spouse's career clock". (Sonnert & Holton, 1996)

Women faculty are not included in discussions, social networks, scientific communities, or scientific culture.

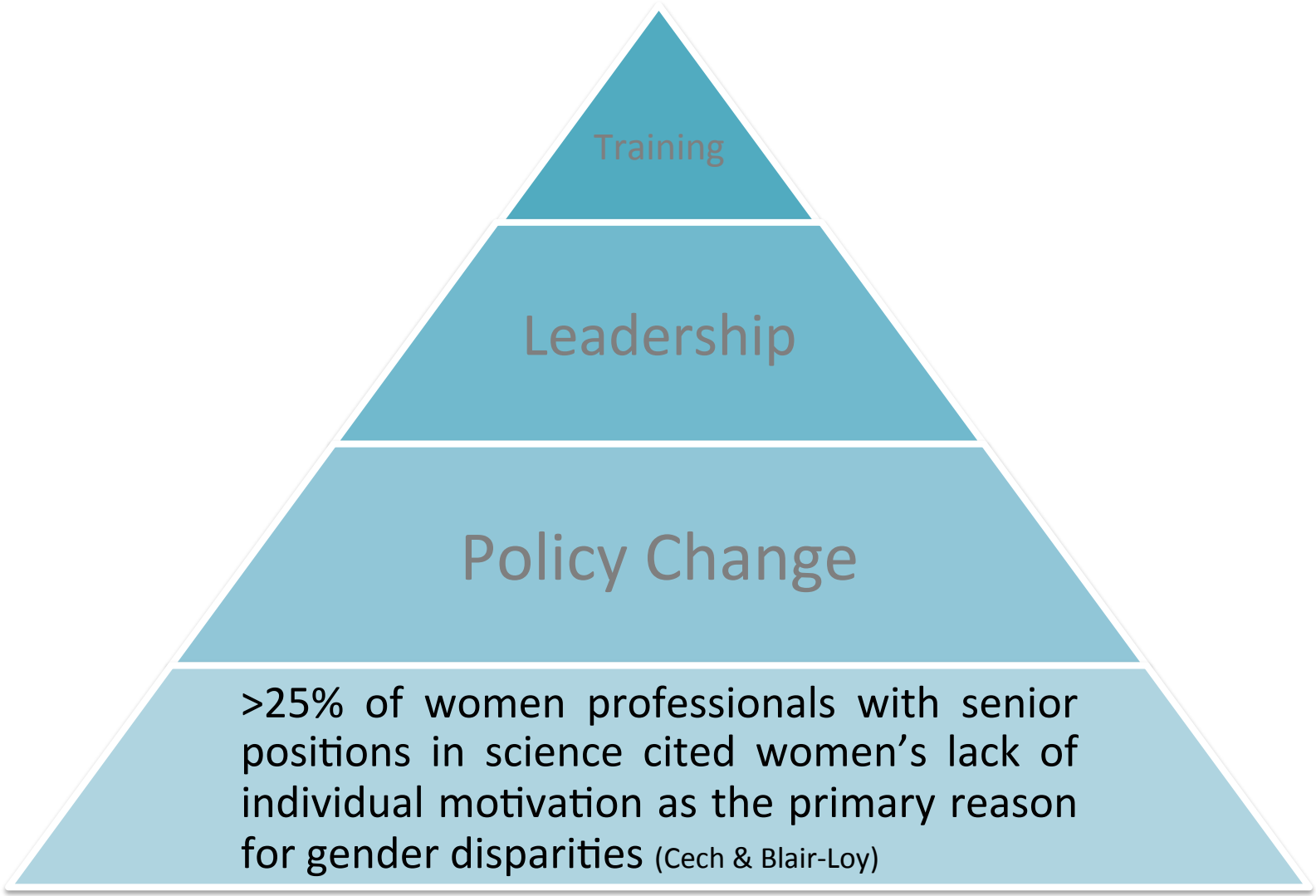
(Fox, 2010; Murray & Graham, 2007)

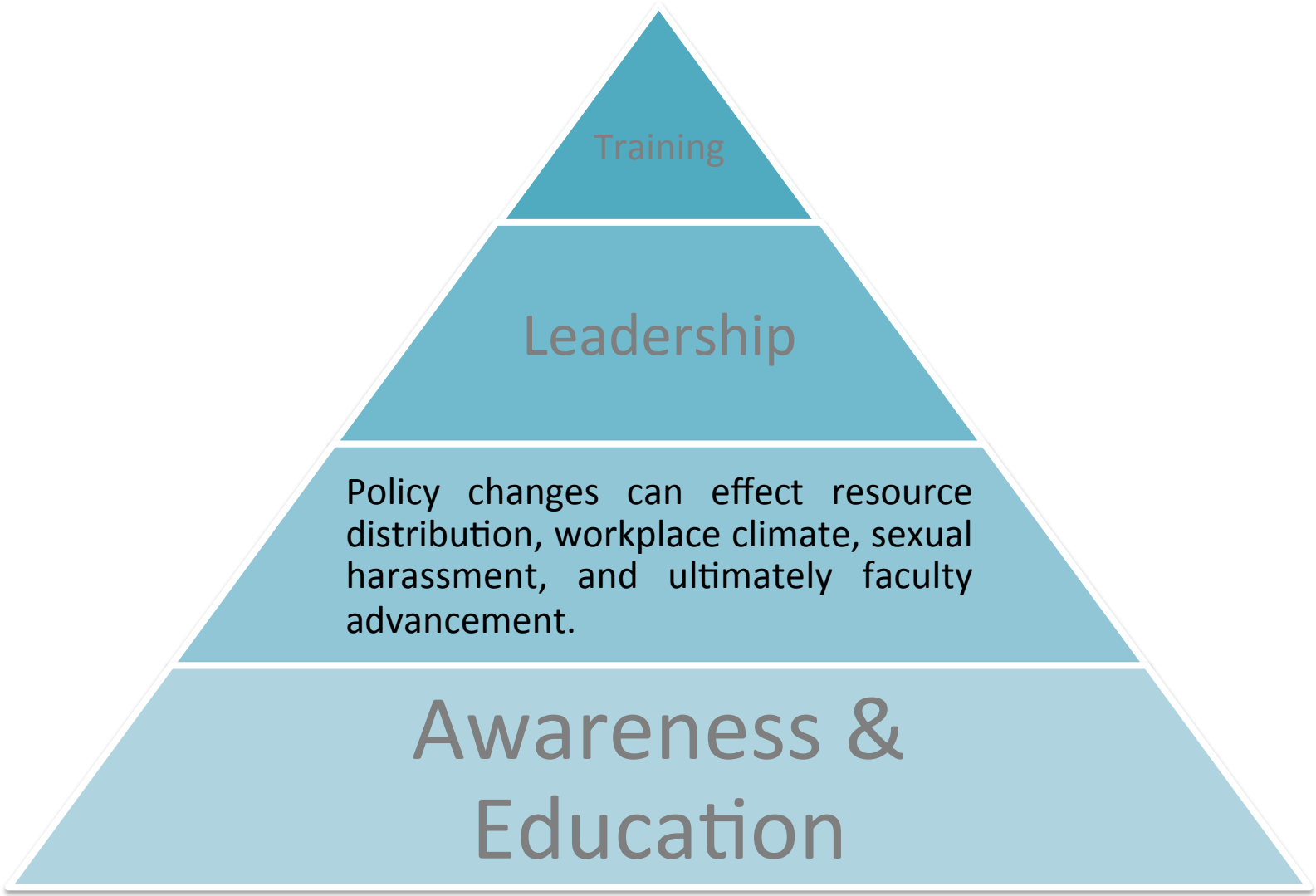
Training

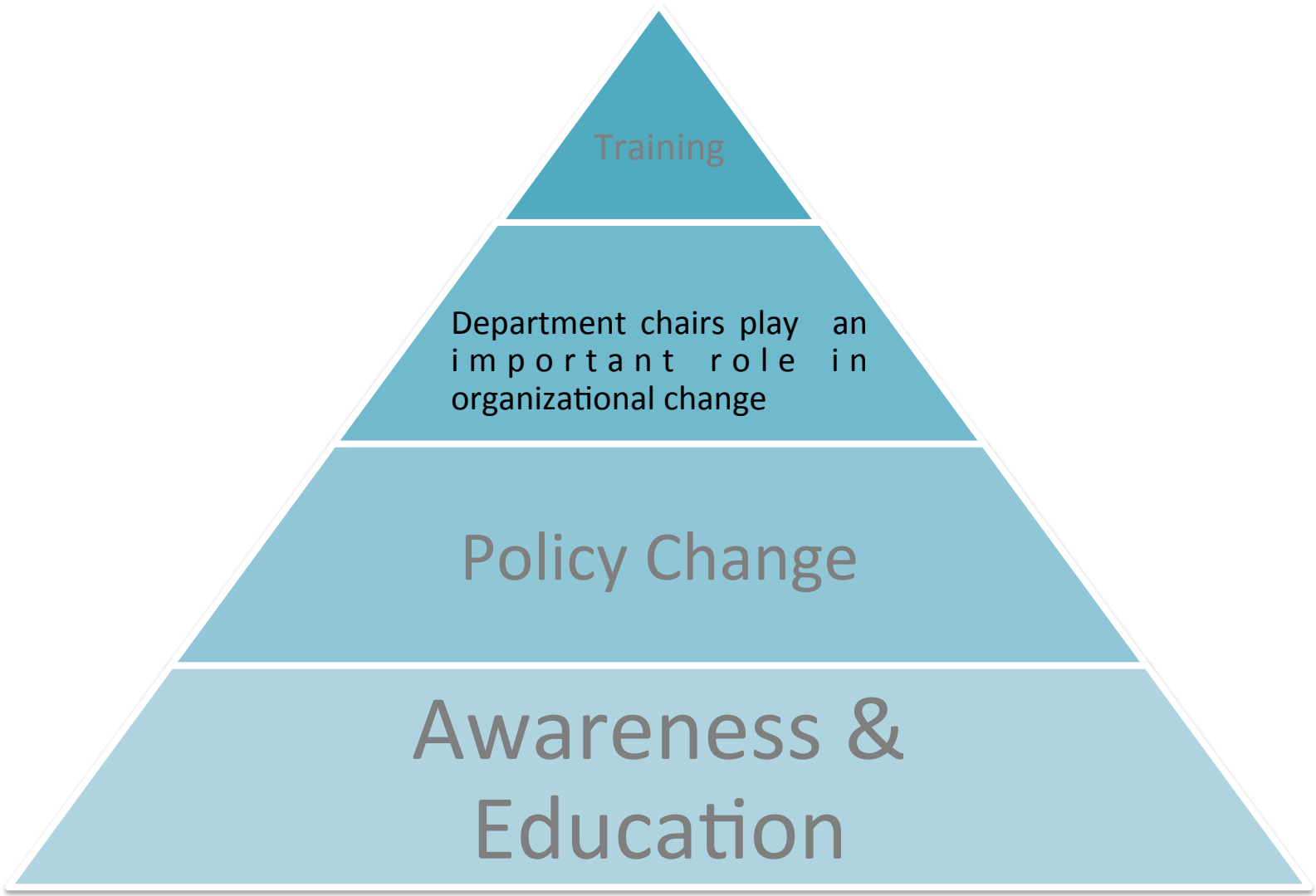
Women engineering and science faculty have less experience and training in academic commercialization largely due to barriers such as gender discrimination, behavioral and attitudinal factors, work-life balance issues, and exclusion from networks.

(Polkowska, 2013; Rosser, 2009; Sanberg et al, 2014; Stephan & ElGanainy, 2006, Thursby & Thursby, 2005; Whittington, 2008)


Training
Leadership
Policy Change
Awareness &
Education


Training
Leadership
Policy Change
>25% of women professionals with senior positions in science cited women's lack of individual motivation as the primary reason for gender disparities (Cech & Blair-Loy)


Training
Leadership
Policy changes can effect resource distribution, workplace climate, sexual harassment, and ultimately faculty advancement.
Awareness & Education


Training
Department chairs play an important role in organizational change
Policy Change
Awareness & Education


Training
Leadership
Policy Change
Awareness &
Education