Building Equity and Equality into Nanotechnologies

Susan E. Cozzens, scozzens@gatech.edu
Georgia Institute of Technology, School of Public Policy and Center for Nanotechnology and Society, Arizona State University

CNS-ASU research, education and outreach activities are supported by the National Science Foundation under cooperative agreement #0531194.
This presentation draws on results from:

- Project Resultar, NSF Grant 0726919, Distributional Assessment of Emerging Technologies
- World Water, NSF Grant 0551777, Global Systems of Innovation in Water and Sanitation for Developing Countries
- Workshop on Nanotechnology, Equity, and Equality, organized by the Center for Nanotechnology in Society, Arizona State University, November, 2008

All opinions, findings, conclusions and recommendations are those of the authors and do not necessarily reflect the view of the sponsors.

The slides used here were used in a training session in Anticipatory Governance given at the S.NET meeting in Seattle in September, 2009.

The scenario

- You are a staffer for an S&T policy decision maker.
- You are helping to put together a nanotechnology initiative or laboratory.
- You want the effort to benefit everyone in your country, not just certain predictable groups.
- What can you do?
- Based on existing research, this presentation outlines some steps you should take.
What are Equity and Equality?

- **Equity** – fair distribution of something people value according to one common theory of distributive justice
  - The least advantaged should benefit.
  - “Pro-poor” policies and programs

- **Equality** – equal distribution of something people value
  - Should not be unequally distributed based on culturally-defined characteristics like gender, race, ethnicity, religion, ability status, etc.
  - “Fairness” policies and programs
What kind of country are you in?

- Big or small?
- Affluent? High standards of living?
- High education levels? Skilled workforce?
- High income inequality?
- One-ethnicity dominant group?
- Democracy?
- Strong social welfare system?
- Industrial economy? Agricultural? Extraction based?
1. Inventory your vertical and horizontal inequalities.

- **Vertical – the rich-poor dimension**
  - Rich country – may tend to forget the poor
  - Poor country – huge gaps between the top and the bottom

- **Horizontal – culturally defined groups**
  - Gender
  - Ethnicity or race
  - Religion
  - Ability status
  - Etc.
Exercise 1: The 3x5 card

- Draw the vertical and horizontal dimensions of inequality in your country/region on a 3x5 card and keep it next to your computer as you design your nanotechnology initiative.
2. Listen to disadvantaged groups.

- Go to poor communities.
  - Listen to both young and old.
  - Listen to both men and women.
- Meet with organized groups, e.g., from the disability rights community.
- Work with spokespeople from disadvantaged ethnic groups.
- Don’t rely on traditional forms of inclusion.
- Listen to professionals who work directly with these groups.
- Don’t expect uniform views, but let the range of voices influence your direction.
3. Add a better life dimension to the criteria for national nanotechnology priorities.

![Graph showing Local capabilities vs. Commercial Opportunities with Women and Men trajectories.]

**Better Life Dimension**
4. Pay attention to production, sales, and service jobs.
   - Danger: over-valuing high-skill, high-wage jobs, especially jobs in R&D.
   - “Egalitarian” policies and programs
     - Focus on middle-skill, middle-wage jobs accessible to many people
     - Focus on large numbers of jobs
     - Make sure they are open to everyone.
   - Examples:
     - Electronics production
     - Pharmaceutical production
     - Korean expansion
5. Set the conditions for widespread commercialization.

- Leave platform knowledge in the public domain or open source.
- Avoid patent thickets.
- Stick to the time limits on patent protection.
- Stay in dialogue with your national representative to the World Trade Organization about influence on equity and equality.
Uneven Risks


- Privileged communities protect themselves from risks so there is a tendency to shift risks towards vulnerable groups.
- Workers are at greater risk.
- Countries of the South may take on greater risk.
- Agriculture-based economies may have to do their own regulating.
- Work on prevention; don’t count on mitigation.
Uneven Costs of Regulation

7. Consider who is paying the costs of regulation.
   - Corn, Czech farmers, and the European corn borer.
     - Costs are very localized; benefits are widespread.
   - What are the costs of the regulations you are considering?
     - Are they disproportionately borne by the groups you are trying to help?
     - Can you shift the costs so that they are borne by the parties that get the benefit?
     - Think of them as a tax scheme. Are they progressive or regressive?
8. **Build global relationships.**

- The global dimension has already been included in Points 1-7.
  - Markets beyond your national borders.
  - Conditions for FDI.
  - Rules set by WTO.

- Worst stories are about the North exploiting the South.
  - Innovation policies in the North probably encourage this behavior.

- **Recommendation:** look at global economic growth as a marketing and business opportunity.
9. Experiment with re-distributional policy and program designs.

- Start from an existing unequal distribution of something people value – such as income, health, or economic opportunity.
- Change the distribution by doing something new that is more fair and creates more equal outcomes than what came before it.

- Three types
  - Pro-poor – focus on lowest end of income distribution
  - Fairness – work towards equality across horizontal groups
  - Egalitarian – expand the middle of the income distribution
Further Reading


For more information…

- **Resultar (Distributional Assessment of Emerging Technologies):**

- **World Water (Global System of Innovation):**
"The problems in developing countries are real and need solutions **now**. Nanotechnology should come on board sooner than later" – Moses Kizza Musaazi

Let’s do it.