

politicalSCIENCE



By Benjamin H. Grumbles

10 areas of
research and
development needing
greater investment

With all the politics these days, here is a timely reminder: “R and D” refers not just to parties but to research and development, the key to sustaining environmental and economic progress and sifting through claims of sound science and silver bullets in the water sector.

The following are 10 areas needing greater investment:

1. Better monitoring, mapping and assessing. It is all about good data, accurate detection and clear vision of trends and threats, whether the challenges involve emerging contaminants, beach water quality or biological warfare agents.

2. IT and electronic networking. Our water, air and waste systems must be integrated to track compliance, set priorities and make informed decisions. States need money and time to “electrify” reporting and permitting so customers do not lose time and money filling out old-fashioned paperwork.

3. Clean, green, water-stingy energy. Good science needs to flesh out the buzzwordy “energy-water nexus.” In Arizona, the push for dry-cooled concentrating solar power is making progress, but cost and practicalities are still a problem. Algae biofuels offer promising green jobs growth, too, without the food vs. fuel debate, but more is needed on the water footprint question.

4. Cleaner coal combustion technology. Advanced coal power is worth the investment whether the driver is climate change or mercury pollution of air and water. We also need continued progress on cost-effective capture and safe underground storage of CO₂ that does not threaten water supplies.

5. Dust control. In tackling one of the Southwest’s key environmental challenges, air and water strategies become linked. It will take a combination of strategies involving accurate monitors and source detectors, smart growth and hard choices.

6. Faster, cheaper groundwater clean-ups. America has more than 1,000 complex, toxic chemical plumes underground. Current pump-and-treat technologies can

be slow and extremely expensive. How soon will better technologies be available, involving in situ treatment, nanotechnology, bioremediation or some other approach?

7. Durable, leak-free infrastructure. My “pipe dream” is that the public will increase financial and scientific support for smarter systems, including design, choice of materials, installation and maintenance of conveyances, treatment plants, septic and beyond.

8. Water-efficiency breakthroughs. WaterSense plumbing fixtures, drip irrigation systems and water-savvy buildings are just the tip of the iceberg. Entrepreneurs will invest in new products if the basic science and technology can lead the way.

9. Affordable water reuse and desalination. Our future depends on making cheaper, better technologies to filter out impurities and desalt marine and brackish waters while building public acceptance and overcoming regulatory obstacles.

10. Climate change adaptation. Scientists, statesmen and stakeholders need to recognize that climate change is water change. Drought, wildfires, snowmelt and sea level rise—these and other issues need the attention of water managers. Universities and science agencies must help in developing adaptation strategies.

The best science and greatest gizmos in the world should not be substitutes for an ethic of personal responsibility and stewardship. They should go hand in hand, which is also how Republicans and Democrats should work together on a range of nonpartisan water science and technology solutions to boost environmental protection and economic prosperity. **www**

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