

**SCIENCE BASED POLICIES:  
HOW CAN SCIENTIST COMMUNICATE THEIR POINTS ACROSS?**

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**ABSTRACT**

With the complexity of environmental problems faced today, both scientists and policymakers are striving to combine policy and administration with the physical and natural sciences in order to mitigate and prevent environmental degradation. Nevertheless, communicating science to policymakers has been difficult due to many barriers. Even though scientists and policymakers share the blame in the miscommunication. This paper will provide recommendations targeted to the scientific arena.

Establishing guidelines for the cooperation of scientists and policymakers can be an unattainable goal due to the complexity and diversity of political policymaking and environmental issues. However, the recommendations provided in this paper are simple enough to be followed by a wide variety of audiences and institutions in the scientific fields. This will aid when trying to fill the gap that has prevented the enhancement of scientific policymaking strategies, which decide on the critical issues such as the disposal, transportation and production of hazardous waste.

**INTRODUCTION**

In recent times, there has been a shift of social goals reflecting concerns regarding environmental issues. The environmental problems faced today are diverse and complex. They go anywhere from the mismanagement, to poor quality, misallocation, and depletion of environmental resources. These problems do not stop here; they are further complicated by multilateral and global environmental dilemmas.

Over the years we have become more aware of the interactions of many disciplines found in environmental problem solving approaches. With the failure of science and policy acting alone to solve such diverse and complicated environmental challenges, there is no choice but to combine policy and administration with the physical and natural sciences in order to address these cross-scale concerns. A shift of interest in management and policymaking reflects the need for re-assignment and re-assessment of the disciplines involved. This multidisciplinary approach gives scientists a more structured and complete method to addressing environmental concerns. Yet, from another perspective scientists find that the problem solving approach is more complicated, involving many more people and with much more interference [1].

Moving towards this shift of social and public interest, the dynamics of environmental issues in the policy process have been relatively understudied. Even when this scale has been

addressed, it has been done by isolated disciplines. Little effort has been made to understand how the assessment of scientific and technical information interacts with decision and policymaking, basically, because there has not been much interaction to be studied.

## **THE PROBLEM**

The physical, chemical and engineered processes used to reduce and minimize the adverse effects of environmental pollution have been limited by a lack of adequate policy and management. Many political borders have been drawn, ignoring the fact that pollution does not respect these boundaries. There is a need to overcome political boundaries to be able to protect the ecological ones [2].

The miscommunication among scientists, policymakers and the public is one of the major issues that prevent the cooperation between scientists and policymakers. The policy and administration of the environment has been pulled in several, often opposing, directions. In part, this is due to the different paradigms that academic disciplines have brought to address environmental concerns. So, the core of the failure of policy and science to manage environmental issues is mainly focused on the lack of cooperation and the lack of communication between these two disciplines. With the decision-making and policy making processes depending on the variety of academic pursuits, the need for scientific policy emerges.

The concept of Scientific Policy can be defined as the implementation of scientific facts and leadership in the decision and policymaking process applied to environmental challenges. As simple and straightforward as that might seem, Scientific Policy has not been applied to many of the environmental challenges faced, because of the lack of miscommunication that prevent such cooperation.

The question now is how can we communicate the science to policymakers? To be able to know how to do so, we need to know why the miscommunication exists to begin with and correct for it.

## **THE FAILURE OF SCIENCE**

There are many reasons why science has failed to communicate with the public and the policymaking arena. One of which is the role of science. The role of science is not only to discover new facts and phenomena, but also to uncover errors appearing in previous investigations [3]. Science may change course or even reverse certain outcomes over time. On one hand this is good since science is always looking for better answers. However, the public and policymakers have been confused by incomplete and contradictory information, making science appear as “shaky science” that has proven to be too costly to policymakers. To make things worse, the media and environmental reporting have become so inconsistent, thus making it harder for the public and policymakers to take science and its contributions seriously.

Another important factor in this miscommunication is the inflexible science that does not always take into account factors such as access to technology, historical attitudes and claims to resources, economic level, and social and cultural differences. In many cases science gives

answers to problems that could only be applied to a certain community with a certain level of development while many other communities face the same problem. There is no magic bullet. One solution cannot be applied in different communities without taking into account social, cultural, political and environmental factors unique to each area [4].

Another dilemma is the use of the various measuring methods and standards in risk assessment. Making it more time consuming to reach a common agreement where scientific standards for monitoring and measurement are to be set or converted. Scientists are often dependent on high-tech methods to approach any challenge they come across. Unfortunately, it is forgotten that many other disciplines and community members involved in a certain problem, are not exposed to such highly detailed outputs presented by scientific instruments. More so, scientists are not always prepared to take the time to explain the results in simpler and more approachable and understandable formats.

Another major difficulty in the communication comes up when scientists use many acronyms and terms that are not found in a typical dictionary while communicating to other disciplines and the public [4]. It is important to realize that if scientists decide to use these terms and acronyms, they need to explain them in a format understood by the general public.

Last but not least, scientists do not tend to take advantage of participating in community outreach such as non-governmental organizations (NGOs). NGOs are involved not just in environmental issues but also, development issues, human rights, labor, etc. This is a good place for scientists to start establishing relationships between the different disciplines involved and the different gaps that scientists could fill. Even better, public involvement and funding opportunities are readily available at NGOs.

There are many other reasons in which science can be blamed for the lack of communication and scientific based policies. It is important to emphasize that scientists share the blame with other disciplines as well, especially the policymakers. In the following section, the recommendations presented are targeted to scientists to improve their communication skills.

## **RECOMMENDATIONS**

In following the steps provided in this section, the scientists are recommended to keep them in mind not only in their professional life, but also when discussing their work to friends and family. Remembering this will result in the natural integration of these recommendations, and by doing so, scientists will not have to make an intentional effort; instead the ideas will flow readily.

The first step to any action is the intent. Scientists need to put the effort in entering the scientific policymaking arena. Why? Because the scientific involvement is critical to the advancement of environmental problem solving and, just as importantly, critical to their professional advancement.

Second, scientists need to understand competing interests, which is something scientists tend to not delve into. It is important to remember that different professions aim for different

outcomes when it comes to environmental management. These outcomes are not always compatible with the scientific needs. To be able to address the different issues faced during their professional careers, scientists need to understand how to make the best use of these competing interests and present their mission as a subject matter that the public and policymakers will be competing for. This translates into more funding, more aid and better understanding from the public and policymakers. Last but not least, the understanding of others to the scientific interests can facilitate accomplishing the goals targeted by the scientific field.

Third, scientists need to understand the importance of financial implications. Cost efficiency should be a major variable in every decision scientists make. Seldom it is seen that the public and politicians are willing to spend a large amount of money for a solution that is not cost effective. A solution that is not cost efficient cannot be considered an appropriate solution. Even though according to scientific methods it might be the best alternative to a problem that science can come up with.

Fourth, scientists need to use the media to their benefit. This is something that scientists are not taught in their school curriculums. How to deal with the media, how to portray their mission and make it a public interest, how to be more diplomatic and reach more audiences of different backgrounds, races and interests, etc.

Fifth, scientists need to lose some of the jargon and terminology they use in describing their work. Not everybody is a chemist, or a biologist or a geologist for example. To reach out to more people, scientists need to be able to get them to understand what they are talking about and what the work stands for. Scientists will not benefit if their audience is lost in the scientific jargon. Reaching out to the public is a very important tool for policymaking. The policies are intended for the public's sake, to help them, discipline them and so that fairness could be applied. If scientists have the public on their side, then policymakers will have more voices to listen to. Politicians find themselves more obligated to hear the demands of a large population instead of hearing the demands of a scientist or a small group.

Sixth, to be able to use the public for better policymaking, scientists need to educate the public. Starting when they are young, scientists need to implement the importance of proper environmental behavior to the general public. They need to portray the consequence of detrimental environmental actions. This is especially relevant to the arena of environmental public health. This is also another area where the media could be of support. Awareness campaigns, public announcements and other community outreach programs are necessary targets of communication.

Seventh, scientists in the academic world need to create more interdisciplinary degrees. Especially graduate degrees that can establish connections between different disciplines. There is a need to educate professionals capable of approaching environmental problems from different angles and from a broader perspective. Professionals should also be able to establish the impact and relationship of local problems with regional, national, and global environmental issues. This is definitely more challenging to the academic administration. However, with time, the payoff will be a less challenging route to communication among the different fields.

Eighth, scientists need to understand that they cannot predict the future. Even though scientists have considerable knowledge about certain topics, and they can project numbers and find solutions. However, things change. Things like social concerns, costs, laws, research and technology. So, it is important for scientists to understand the concept of adaptive management. When they implement a solution for a certain problem. The solution should be flexible to be able to accommodate to different social, political, cultural and technological circumstances.

Ninth, scientists need to be more involved to investigate issues that are of alarm to society. Yes, scientists need to get out of the lab, away from the field, away from the clients, the students, and the computer. They need to make an effort to investigate trends of social concerns. They need to ask themselves, how their work fits into all of this. How can they communicate the results of their work to the public, to policymakers? This is how valuable a scientist's work is. Valuable it might be, until it is heard, used and adapted to fit the needs of society, the work is incomplete.

Finally, the tenth recommendation is that scientists need common headquarters and logistics to be able to get their points across. They need a place where they can make all this happen, that is common ground for both scientist and policymakers. Even though, this might not always be accessible, scientists need to make use of whatever quarters they have access to. Scientists should make an effort to meet with the public and the politicians...it could be at work, university luncheons, social gatherings and campaigns, etc. The location is not as important as the methods by which they communicate and approach the public and politicians.

## CONCLUSION

In conclusion, resolving all scientific and political uncertainty may be an unattainable goal. However, science should and can aid policy in recognizing scientific facts from all the jargon and hype and further enhance policy by scientific leadership and scientific involvement in the actual policymaking process, making environmental problem solving policies more approachable and understandable not just to the politicians and scientist but also to the public, for whom all this work is intended for in the first place.

## REFERENCES

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