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2 **Aims of Governance Change for the Future of the Sacramento – San Joaquin Delta**  
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10 As we ponder the driving forces on the future of the Delta and sift through the technical alterna-  
11 tives, the importance of governance becomes ever more clear. In this short essay, I try to identify  
12 and briefly describe different aims for governance that will be needed to strengthened to work  
13 with the powerful driving forces, especially in light of the large uncertainties around them, in the  
14 context of the diverse services the Delta provides to different interest groups. Needless to say,  
15 governance and financing are interlinked, and so this memo keeps the links.  
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17 **Driving Forces**  
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19 Many now expect climate change to be a powerful, new driver forcing the system in novel ways:  
20 increasing sea level; impacting the amount, periodicity, and form of precipitation; affecting the  
21 intensity of storms; compounding the difficulties of managing of local species and addressing the  
22 dynamics of invasives, as well as creating a whole new problem of helping species in need of  
23 refuge from other regions undergoing environmental change. Population growth and urbaniza-  
24 tion will surely continue, shifting water needs from agriculture to domestic and perhaps indus-  
25 trial uses. Infrastructure, always decaying, will need to be maintained and in many cases seri-  
26 ously upgraded. New technology meanwhile will open up new opportunities to conserve and  
27 desalinate water as well as to monitor, understand, and manage ecosystems.  
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29 If the future were certain, or even its trajectory known, we could design governance institutions  
30 for all time. Legislation and administrative regulations have historically been written as if they  
31 could be correct not only for all time but all places as well. This is because property owners  
32 desire property rights that do not change and corporations seek regulatory frameworks that  
33 reduce the uncertainty of any investments they make. Yet underlying these practical concerns,  
34 “The Quest for Certainty” (John Dewey, 1929) seems fundamentally a part of the modern  
35 psyche. And science has frequently been called upon to answer this quest. Yet we are now in a  
36 period when the rates of change of climate, ecosystem transformation, population (at least in  
37 California), technology, and globalization are so great that the specifics of how they will interact  
38 and play out over time leave us in a period of great uncertainty.  
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40 With the increasing strength of new driving forces and speed of change, stronger governance is  
41 needed. To a large extent we need the institutions we have, and more. But, we cannot simply add  
42 more governance institutions on to existing ones. To some extent, existing institutions have  
43 gotten us into the problems we have and few sufficiently address the future we now see. This  
44 means we need to loosen the grip of some existing institutions, give existing agencies new  
45 mandates, and establish new governance structures to meet public goals under changed  
46 circumstances.

## Governance

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49 Risk, Resilience, and Responsibility. Historically many risks have been substantially alleviated at  
50 the local and individual level because higher levels of government have absorbed the costs of  
51 avoiding the risks and of recovering from disasters. This is both a legacy of big government and  
52 large engineering projects and an outcome of interest group politics. Those bearing risks had a  
53 clear incentive to incrementally push them on to the public at large without the public at large  
54 ever organizing to determine whether the end result was desirable or not. Thus land developers  
55 and homeowners expect the public to bear the costs of flood protection and the benefits of such  
56 protection are already capitalized in the value of the land. Agricultural districts expect state and  
57 federal agencies to deliver water on a fixed schedule even though rainfall is highly variable, and  
58 this benefit has been incorporated in the value of agricultural land. In both cases, this leads to an  
59 expansion of development dependent on higher levels of government because developers do not  
60 have any incentives to stem development or tailor it around diverse local solutions.

61 As a consequence, we have a system that has pushed large engineering approaches at the  
62 state and federal levels nearly to their limits while local approaches to meeting needs are under-  
63 exploited. Meanwhile some major investments, undertaken as big government projects in the  
64 past, are decaying (levees). The governance overseeing the future of some existing projects  
65 needs to be reconsidered. In general, we now need a shift in governance responsibility toward the  
66 regional, local, and individual to provide appropriate incentives and finance mechanisms. In  
67 accordance with this aim, major investment projects such as conveyance structures should be  
68 designed, to the extent possible, in increments that provide specific services that specific  
69 potential users then bid on.

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71 Adaptiveness. Governance institutions must respond to the increased level of uncertainty by  
72 shifting toward increased flexibility in responses. This flexibility must be with respect to both  
73 timing and place. Adaptive environmental management, at least in a reduced form that more  
74 formally acknowledges that new information arises over time to which management should  
75 respond, is now a well-accepted concept within resource management agencies. We now need to  
76 apply the concept more fully in practice and extend its application to the public interest in the  
77 regulation of private land uses. One of the interesting things about climate and ecosystem change  
78 is that there is also considerable uncertainty as to where phenomena will arise. Governance to  
79 meet public goals has historically been tightly tied to particular places. Parks, wildlife reserves,  
80 and habitat conservation plans all have boundaries that particular species “respect” at their peril  
81 as climate and ecosystems change. The concept of adaptive environmental management needs to  
82 be extended to address the uncertain spatial dynamics of climate change as well as the uncertain  
83 duration of an ecological regime in any particular place.

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85 Coordination. As we rely more on individual and local incentives to act, regional and statewide  
86 institutions must be strengthened to assure that decisions under consideration in one locale do not  
87 burden people in other locales or broader environmental goals. Higher levels of government are  
88 gradually shifting from centers of command and control to coordinators of multiple actors at  
89 lower levels. Regional agencies have a strong history as coordinating institutions. To a consider-  
90 able extent, CALFED worked as an institution in which various parties became better informed  
91 of how their interests and actions intersected with the interests and actions of others. At the same  
92 time, however, “peace” has been maintained through existing coordinating mechanisms by a lack

93 of action that has pushed the system into crisis. Stronger coordinating governance mechanisms  
94 will be needed to facilitate the public good as we address the ever strengthening driving forces.  
95 More time and effort will have to go into coordination as we look to the strength of diverse,  
96 context specific approaches to reducing problems and meeting goals.

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98 Trust-building. Ironically, water is an extremely divisive issue in California, yet the water system  
99 operates because of great trust. We expect those making day-to-day decisions about water to do  
100 their best to assure its quality and reliability while protecting the environment, and they do.  
101 Distrust between Northern and Southern California has decreased since the peripheral canal was  
102 on the ballot because the environment is higher on everyone's agenda and all are aware that there  
103 are no simple solutions. The CALFED process helped build this trust. At the same time, even  
104 greater trust will be needed as we shift decision-making toward the local and individual, as we  
105 rely on diverse ways to meet our water goals, and as the environment changes in the future. The  
106 strengths of the coordinating institutions can complement or work against increasing trust, but  
107 for governance to be effective over the long run, trust-building needs to be recognized as an  
108 important aim and be an attribute built into many aspects of governance.

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110 Both the increased efforts at coordination and in trust-building institutions need to be supported  
111 out of general revenues, probably statewide, so that poor locales and less powerful interest  
112 groups can continue to participate.

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114 Monitoring, Analysis, and Information Sharing. As we move toward a more decentralized, adap-  
115 tive, and resilient water system, we need to think about the governance structures supporting the  
116 generation and sharing of data and knowledge. Information gathering and analysis is becoming  
117 less and less costly and easier to share. How we interpret the significance of changes in  
118 ecological and other complex systems, however, still relies on human judgment. Different types  
119 of scientists use different frameworks for analyzing different parts of complex systems.  
120 Reconciling what different scientists know and building a shared understanding among scientists  
121 and practitioners is an intensive process. The CALFED Science Program has helped breakdown  
122 the compartmentalization of science in the agencies and across the disciplines through  
123 interagency research efforts and workshops uniting academic and agency scientists. But we need  
124 even greater effort in the future given the importance of water to California and the uncertainties  
125 that need to be resolved with respect to the interactions between the driving forces to better  
126 manage water in the future.

127 Existing agency driven and funded science and CALFED driven and funded science  
128 might be supplemented with more non-agency funded water science to strengthen the community  
129 of scientists addressing California water issues. With increased dispersal of decision-making,  
130 there may be more reason to support more citizen involvement in science to sustain trust and  
131 build bridges to local leaders.