

Abstract Submitted  
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**Nuclear Energy Present and Future** I.H. HUTCHINSON, MIT —  
Nuclear power plants currently generate about 20% of US and 17% of world electricity, which makes nuclear the largest non-emitting energy source in current use. Concerns about global climate change have led to a remarkable transformation of attitudes towards nuclear energy. There remain key challenges that must be faced when considering expansion of its contribution. In summary they are: Economics, Safety, Waste Disposal, and Proliferation. Electricity from legacy fission plants is highly competitive with fossil, but perceived financial risks make the large capital cost fraction a key hurdle to new-construction, and costs of \$2 per installed Watt electrical are currently considered only just economically attractive. Proliferation of nuclear-weapons-enabling technology is a major concern for global stability, in which fusion may have significant technical advantages over fission. But proliferation control requires a combination of both technical and political initiatives. The feasibility of supplying process heat or hydrogen from nuclear energy inspires additional research into novel reactor concepts and associated technologies. The presentation will lay out this overall context of the nuclear energy renaissance.

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