Do we need a global project on artificial photosynthesis?

In his recent book Professor Keith Barnham argues that society must focus on exploiting $E=hf$ in its attempts to move away from reliance on fossil fuels. A global project on artificial photosynthesis (GAP) could serve to accelerate progress in this direction. Commercially deployable photo-reactors, which would produce fuel from sunlight, are required urgently. With effective governance and efficient monitoring of developments in all fields related to 'artificial photosynthesis', the present need for the design, optimisation and demonstration of the commercial feasibility of such systems could perhaps be met more quickly; this should be the principal aim of GAP. However, presently, the bulk of global research on artificial photosynthesis is focused on the development of individual material components of photo-reactors; translation of the developments to pilot plant scale is seen less frequently. Yet this must happen if we really wish to use sunlight for solving the world's energy demands. Hence, the science and engineering must be tackled in parallel. The main problem, clearly, is that currently photo-reactors do not generate fuel at sufficiently high rates to be of commercial interest. Perhaps then we should look for a stepping stone that would accelerate the route to commercialisation: the performance of photo-reactors may be improved greatly if they are coupled to photovoltaic cells or solar concentrators. GAP should serve to stimulate efforts in this direction, having first identified the most promising research world-wide, including work on materials, which must be cheap, robust and efficient. In order to speed up the process of consolidating the results of all current research GAP could launch a global competition that will appeal to scholars at all career stages. The task could be to design a scalable photo-reactor system complete with suitable catalysts and components required for its installation and operation in an industrial setting.