The major global challenges we are facing today need to be addressed in the multifaceted context of economy, society, environment and technology (ESET). In recent years, the consensus of calling for sustainable development (SD) and implementation has emerged. Along with this belief, high added value, knowledge-based, competitive sustainable manufacturing (CSM) has been widely considered as main enabler. This paper presents the necessary steps from economic growth to sustainable development. The reference model for proactive action (RMfPA) is proposed to develop and implement CSM, at national and global levels. Furthermore, we also review strategies to pursue CSM at the macro-meso-field level in addition to ongoing national initiatives in different countries and by international organizations. A case study concerning the European Manufuture initiative is cited. The overall results conclude that RMfPA is a good ground for pursuing CSM. Necessary actions by stakeholders at different levels, spanning from policymakers to Industry, University and Research Institutes, are also discussed. CIRP, as a global academy, can play a relevant role at strategic, scientific and technological levels for the incoming global technological and industrial revolution: CSM.