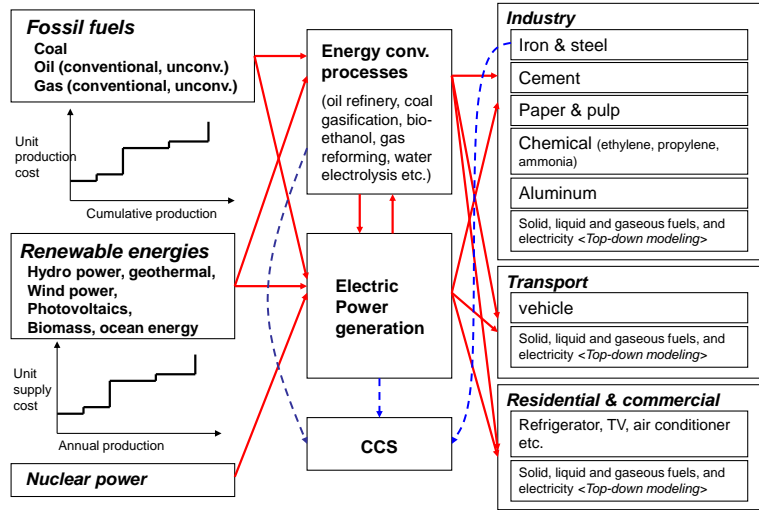
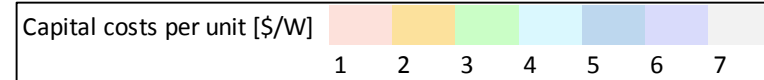


Assessment of Potential and Breakeven Prices of Fusion Power Plants Under Low-Carbon Development Scenarios

Global energy system assessment model: DNE21+

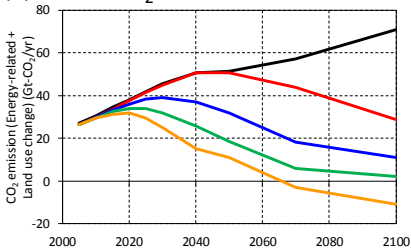


Breakeven prices of fusion power plants

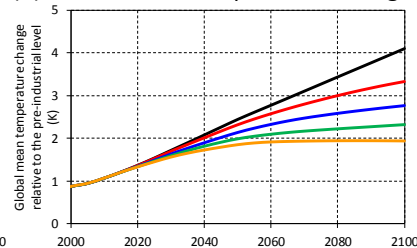


	United States		EU		Japan		China		Korea		India		Russia	
	Pulsed	SS	Pulsed	SS	Pulsed	SS	Pulsed	SS	Pulsed	SS	Pulsed	SS	Pulsed	SS
<i>Default Plant Availability ($f_{\text{availability, Pulsed}} = 0.55, f_{\text{availability, SS}} = 0.70$)</i>														
Reference														
CP6.0														
CP4.5														
CP3.7														
CP3.0														
<i>Enhanced Plant Availability ($f_{\text{availability, Pulsed}} = 0.70, f_{\text{availability, SS}} = 0.90$)</i>														
Reference														
CP6.0														
CP4.5														
CP3.7														
CP3.0														

(a) Global CO₂ emission



(b) Global mean temperature change



- Breakeven prices (BPs) and potential capacity of fusion power plants under five low-carbon development scenarios were studied by using a global energy system model DNE21+.
- A wide range of breakeven prices of capital costs per unit of 1-8 \$/W in the United States, the EU, Japan, China, Korea, India and Russia were revealed in the different condition of five CO₂ emission pathways and four types of innovativeness of fusion plant technology.
- A prospect of the capital costs less than 5 \$/W and/or enhancement of the plant availability is desired in the DEMO project.
- Fusion can play a significant role in the low-carbon development if it secures the economy, substituting for fission and fossil fuel power plants with carbon dioxide capture and storage (CCS).