

A 3-hour Management Development Program for senior-level Executives of Damodar Valley Corporation (DVC) on

Green Hydrogen Ecosystem

1. Introduction

Green Hydrogen is emerging as a critical component of India's long-term decarbonisation strategy, particularly for sectors where direct electrification is technically or economically challenging. For large power utilities such as DVC, the emerging hydrogen ecosystem presents opportunities for renewable-energy integration, energy storage, industrial decarbonisation and development of new energy businesses.

This programme will provide an integrated understanding of the Green Hydrogen value chain, covering production, storage, transportation and industrial applications, along with the financial and investment considerations required for successful deployment. The technical component will focus on renewable-energy integration, electrolysis, hydrogen production, storage, transportation and emerging applications. The financial component will examine Levelised Cost of Hydrogen (LCOH), CAPEX/OPEX, utilisation, financing, project returns, risk and bankability.

The programme will particularly examine the strategic question of how a large power utility can assess and participate in the emerging Green Hydrogen economy.

2. Learning Objectives

The programme aims to enable participants to:

- Understand the complete Green Hydrogen ecosystem and its relevance to India's net-zero strategy.
- Understand major hydrogen production technologies, particularly water electrolysis and renewable-energy integration.
- Assess the influence of renewable electricity cost, electrolyser efficiency and utilisation on hydrogen production.
- Understand hydrogen storage, transportation and distribution options.
- Identify major industrial applications including green ammonia, steel, refining, chemicals and other hard-to-abate sectors.
- Understand the Levelised Cost of Green Hydrogen and its principal cost drivers.
- Evaluate CAPEX, OPEX, financing cost, WACC, NPV, IRR and payback period for hydrogen projects.
- Understand the impact of renewable intermittency, capacity utilisation and infrastructure requirements on project economics.
- Examine business models, offtake arrangements, policy incentives and risks associated with Green Hydrogen projects.
- Develop an executive-level framework for assessing Green Hydrogen investment opportunities for DVC.

3. Batch size: 30

4. Session Plan:

Day	Session I (10:30-11:00)	Session II (11:00-12:00)		Session III (12:15-13:15)	Session IV (13:15-13:30)
1	Green Hydrogen: Energy Transition and Strategic Context – Green Hydrogen value chain; hydrogen versus direct electrification; India's net-zero transition; opportunities for power utilities	Production of Green Hydrogen – Alkaline, PEM and emerging electrolysis technologies; renewable-energy integration; electricity requirement; electrolyser efficiency; capacity utilisation; solar/wind–hydrogen systems. Storage, Transportation and Industrial Applications: Compressed hydrogen, liquid hydrogen, hydrogen carriers, ammonia; pipelines and transportation; green ammonia, steel, refining, chemicals and mobility	TEA	Financing Green Hydrogen Projects – Project CAPEX, debt-equity structure, WACC, NPV, IRR, payback period, cash flow, financing cost and project viability	Business Models, Risk and Bankability, Offtake agreements, green premium, carbon value, policy support, technology risk, energy-price risk, offtake risk and financing risk

5. Commercial:

Venue: Kolkata

Mode: Offline.

Program fee: **Rs. 5000** per participant, plus GST. This includes compendium of relevant reading material, faculty honorarium and overheads of IIT Kharagpur. Faculty travel from Kharagpur to Kolkata and back to be charged as per actuals.