adani | Gas

NATURAL GAS CONFERENCE 2026

Construction of CGD Networks

New Technologies, Innovation & Experience Sharing on Project Execution Excellence

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Adani Total Gas Limited, Ahmedabad | www.adanigas.com

PRESENTATION FLOW

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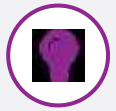
03  Experience Sharing – What Drives Success

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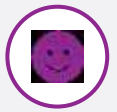
10  Customer Delight – Digital-First Experience

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CGD Growth & the Execution Imperative

307

Geographical Areas authorised — ~98% of India's population covered

6.2% → 15%

Target share of natural gas in India's energy mix by 2030

17 → 120 Mn+

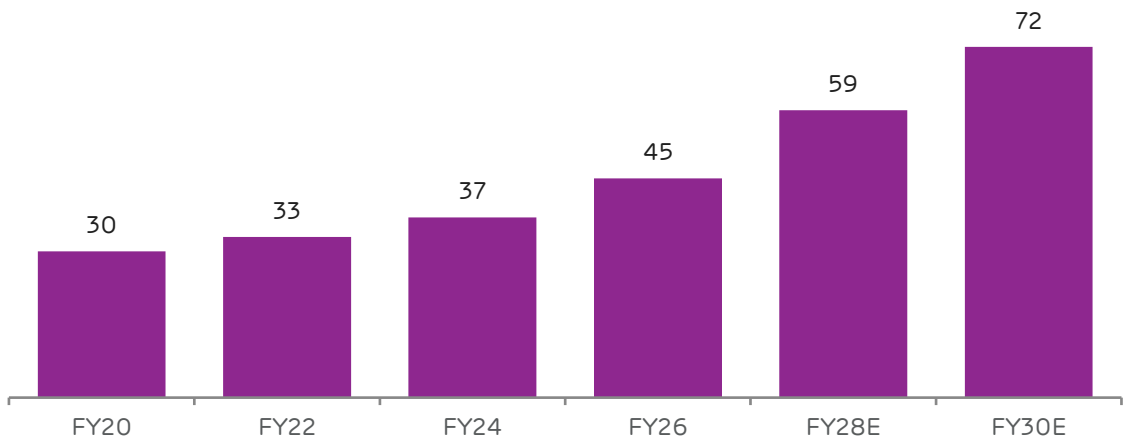
PNG households targeted by 2030 (7.4× growth)

~8,900 → 18,000+

CNG stations targeted by 2030 (≈2× growth)

Sources: PNGRB; MoPNG / PIB; ATGL Business Immersion 2026

CGD-led natural gas demand in India (MMSCMD)



The New Differentiator

Authorisation no longer defines success — how fast, safe and economically a network is built and commissioned decides market penetration, MWP compliance and customer acquisition.

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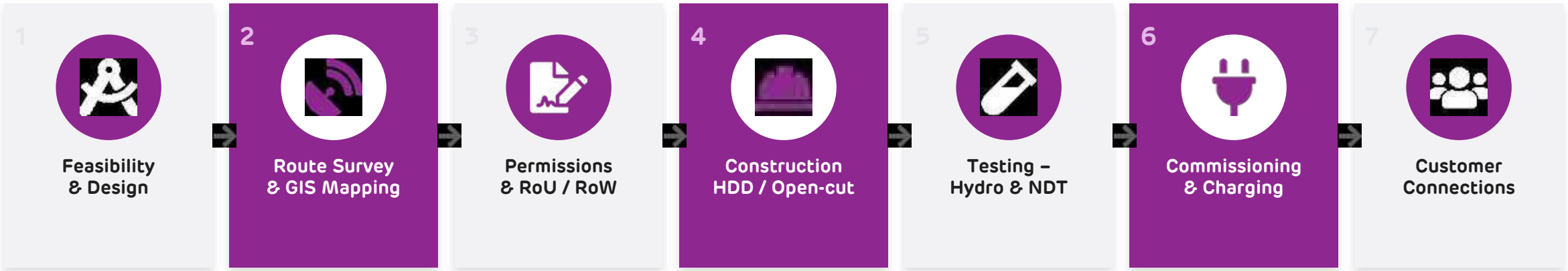
The CGD Project Lifecycle



Execution reality

The lifecycle looks linear — but each stage carries independent risk. A slip in survey, RoU approval or a single crossing cascades into schedule and cost overruns. Front-loaded planning (GIS + permissions + material readiness) is the single biggest lever on overall project velocity.

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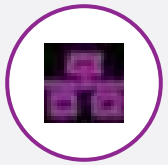
Major Challenges in CGD Network Construction

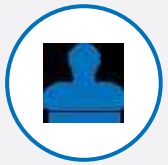


Utility Congestion

Dense, poorly-mapped underground assets — water, sewer, telecom, power, drainage.

Traffic & Corridor

Limited working width, live traffic and restricted night-work windows in cities.



Approvals & RoU / RoW

Municipal, road-owning and railway/highway agency permissions on the critical path.

Multi-Contractor Mix

Coordinating multiple agencies, skilled manpower and material logistics across GAs.

Aggressive Timelines

PNGRB Minimum Work Programme (MWP) commitments with penalties for shortfalls.

Restoration & Public

Road restoration cost, dust/noise and public acceptance in populated areas.

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What Drives Execution Success

Key Success Factors

- Route validation & utility mapping before mobilisation
- Early, parallel stakeholder & approval management
- Dedicated RoU / RoW cells per Geographical Area
- Multi-front execution with advance material readiness
- Daily progress review & structured escalation
- Trenchless-first mindset for congested corridors

Case in point — dense urban GA

CHALLENGE

Heavy utility congestion, multiple road/rail crossings and approval delays in a Tier-2 city core.

ACTION TAKEN

GIS + GPR mapping, HDD for arterial crossings, a dedicated authority-coordination desk and digital daily monitoring.

RESULT ACHIEVED

Faster commissioning, minimal open-cut disruption and improved safety & restoration performance.

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HDD & Trenchless Construction Technologies

Where we deploy it

- **Major road crossings**
- **Railway crossings**
- **River / canal crossings**
- **Dense city corridors**

Trenchless is now mainstream for CGD

HDD, micro-tunnelling, pipe-thrust & pipe-ramming are the default for arterial crossings — India has executed 3–4 km river HDD crossings for gas pipelines.

HDD rig executing a trenchless crossing on a live city road

Why it wins

- **Minimal surface disruption**
  Traffic keeps moving; businesses stay open.
- **Faster execution**
  Bores proceed where open-cut is halted.
- **Lower restoration cost**
  No road rebuilding across the bore length.
- **Deeper, safer placement**
  Installed beneath existing utilities.

Sources: API HDD white paper; IGEM/SR/28 (UK) Trenchless Techniques; GAIL HSE (PNGRB 2025)

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Global Best Practices in Pipeline Construction

Trenchless-first for obstacles

API · USA

API (USA): steerable HDD — pilot bore, ream, pull-back — to cross rivers, highways & dense urban areas without open-cut.

811 / Dial-before-dig

CGA · USA

CGA Best Practices v22 (USA): one-call locate & positive identification of every buried utility before excavation.

Subsurface Utility Engineering

SUE / CGA

CGA 2.14 & potholing: SUE + vacuum potholing to verify depth/alignment and eliminate utility strikes.

Trenchless safety standard

IGEM · UK

IGEM/SR/28 (UK): safety plan, risk assessment, gas monitoring, plant maintenance & operator accreditation per job.

Integrity & monitoring

OISD · India

IndianOil / OISD: 24×7 SCADA, intelligent pigging, cathodic protection, RoU patrolling & markers.

Public awareness programmes

CGA · IOCL

IndianOil / CGA Ch.8: community outreach is the leading defence against third-party damage — the #1 accident cause.

Sources: API HDD white paper; Common Ground Alliance Best Practices v22.0 (2026); IGEM/SR/28 Ed.2 (UK); OISD & IndianOil pipeline-safety practices

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Innovation in Construction Methodology

Mechanised Trenching

Faster, consistent excavation with reduced manual dependency.

Vacuum Excavation

Non-destructive digging near live utilities to prevent damage.

GPS-enabled Equipment

Machine guidance for precise alignment, grade and depth.

Automated / Orbital Welding

Higher weld quality consistency and productivity on steel lines.

Pre-fabricated Assemblies

Off-site fabrication of skids/assemblies to cut site cycle time.

Excavator Geo-fencing

SCADA-linked proximity alerts to protect existing gas pipelines.

Outcome

- Higher productivity
- Improved safety
- Consistent quality
- Lower manpower risk

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Managing Utility Congestion

Vacuum excavation & marked utilities — safe digging near live assets

Urban execution challenge

Navigating dense, poorly-mapped underground assets — water, sewer, telecom, power & drainage — is the single largest execution risk and the top cause of delays and third-party damage in city projects.

Mitigation measures

GIS Mapping Digitising utility corridors on ArcGIS for route optimisation & conflict detection.

GPR Surveys Ground-penetrating radar builds a predictive, depth-aware utility register.

Trial Pits / Potholing Physical verification of depth & alignment before mechanised excavation.

Joint Authority Coordination Working with municipal & utility owners to de-conflict and de-risk routes.

Excavator Geo-fencing SCADA-linked proximity alerts protect existing live gas pipelines.

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SOUL — ATGL's Digital Business Operating System

SOUL Command Centre

Single Unified Operations Layer — a cloud backbone across 53 GAs & 125 districts, on three pillars: Automation, Analytics & Customer-Centricity.

SCADA + IC

300+ stations · 80,000 tags

GIS – ArcGIS

35,000 tags configured

AMR Metering

6,000+ integrated

CCTV / VTS

1,000+ / 500+ feeds

SAP

Billing, IVRS & field service

ServiceNow + ERMS

Unified service management

~93% of CNG sales managed on SOUL • **98% consumer collections** via My Adani Gas app on SOUL • **rapid, standardised scale-up to new GAs**

Sources: ATGL H1FY25 results; ATGL PNGRB digitalisation presentation (Mar 2025); ATGL LinkedIn (SOUL)

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GIS, SAP & the Connected Enterprise

GIS (ArcGIS) — live pipeline & utility layers for route intelligence

GIS-led planning & asset management

- Route planning & utility conflict detection before mobilisation
- Real-time construction data + digital as-built pipe book (APDM)
- Foundation for leak survey, O&M and emergency response

SAP-powered enterprise backbone

- **SAP IS-U** Customer billing, metering & utility processes
- **SAP PM** Preventive / predictive maintenance of assets
- **SAP MM** Material planning, procurement & inventory control
- **Cloud SAP-IVRS** Integrated call handling & first-call resolution

Unified physical + digital ecosystem

Honeywell SCADA, Siemens/Phoenix PLC, ArcGIS, AMR, VTS & customer data integrated into one GIS-and-SAP layer on Adani Industry Cloud (ATVI) — with anomaly detection, ticketing (ServiceNow) and 60+ Industry-Cloud integrations.

Sources: ATGL PNGRB digitalisation presentation 2025; Adani Industry Cloud (ATVI); EICE Technology CGD case study

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Project Control Tower & Field Digitisation

Drone-based progress monitoring & leak survey over the RoU

Connected construction ecosystem

- **GIS route planning & utility conflict detection**
- **GPR surveys & digital utility register**
- **Mobile field inspection & digital QA capture**
- **Geo-tagged weld traceability (QCM) & e-DPR**

Real-time Control Tower

What we monitor daily, GA-wise

Pipeline laid
km / day

HDD progress
crossings

Restoration
% closed

Productivity
per front

Safety KPIs
PTW / NM

Approval pendency
ageing

Field activity → actionable insight → faster, transparent decisions across all levels.

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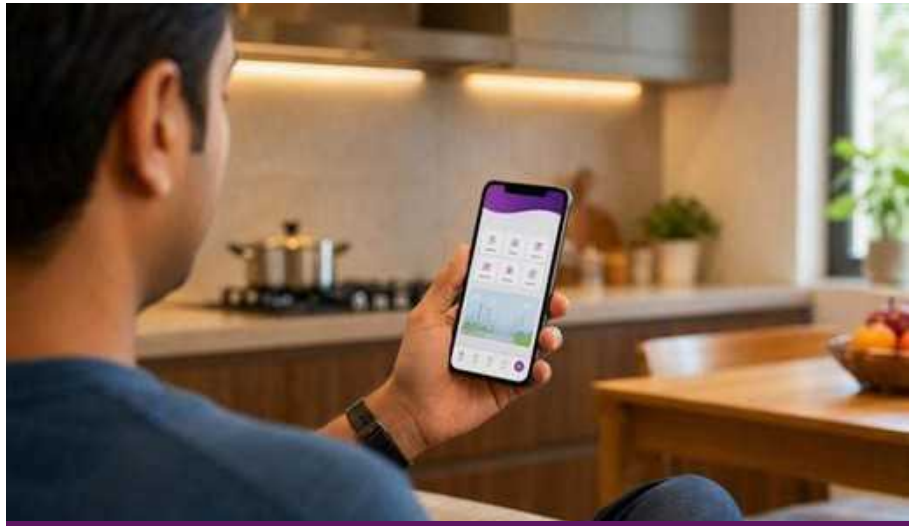
Customer Delight — A Digital-First Experience



My Adani Gas app — the customer's single window

100%

Digital onboarding

98%

Digital collections

Digital innovations elevating the experience

My Adani Gas App

Registration, self-billing, payments & service — 99%+ digital payments.

Cloud SAP-IVRS

59% of emergency & 30% of total calls handled via intelligent IVRS.

62% Digital Tickets

Two-thirds of service tickets managed via app, website & IVRS.

Self-Service Kiosks

India's 1st CGD self-service kiosk (Adani Gas Mitra).

Computer-Vision BOM

AI isometric capture — accurate billing, less pilferage.

Doorstep CDC Vans

On-ground query resolution reaching 38,000+ customers.

Source: ATGL Integrated Annual Report FY24–25 (Customer Delight); ATGL Business Immersion 2026

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Safety & Quality Excellence

Automated orbital welding with 100% NDT — quality built in, not inspected in

Safety Excellence

- Permit-to-Work & Life-Saving Rules (HIRA)
- Excavation & utility-damage prevention
- AI-enabled CCTV / proximity monitoring
- Contractor safety certification & HSE audits
- Tool-box talks & near-miss reporting

Quality & Standardisation

- Approved WPS / PQR & weld traceability
- 100% NDT / radiography on steel welds
- Hydro-testing at 1.5× before commissioning
- Digital QA / QC records (paperless)
- Standardised SOPs → reduced re-work

"Safe projects are successful projects" — safety and quality are execution enablers, not just compliance.

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Replicable Industry Best Practices

Curated from the PNGRB CGD Best-Practices Compendium and ATGL's own initiatives

Excavator Geo-fence + SCADA

THINK Gas

Real-time alerts when machinery nears a live gas pipeline — prevents third-party damage.

Quality Construction Mgmt (QCM)

THINK Gas

Geo-tagged, time-stamped weld traceability for end-to-end pipeline QA.

Cluster-based Execution

MGL

Congested-area resource clustering — faster conversions & authority coordination.

Multi-vendor LMC Award

BPCL

Award to L1–L6 (rate-matched) for rapid, parallel last-mile execution.

Computer-Vision BOM

ATGL

AI isometric capture of on-ground piping — accurate BOM, less pilferage.

Life-Saving Rules + HSE Audits

MGL

PTW, HIRA before high-risk work, cross-functional review & rewarded safety culture.

Source: PNGRB PNG Best-Practices Compendium 2025 (THINK Gas, MGL, BPCL, HPCL); ATGL Business Immersion 2026

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ATGL Journey — Lessons & Best Practices

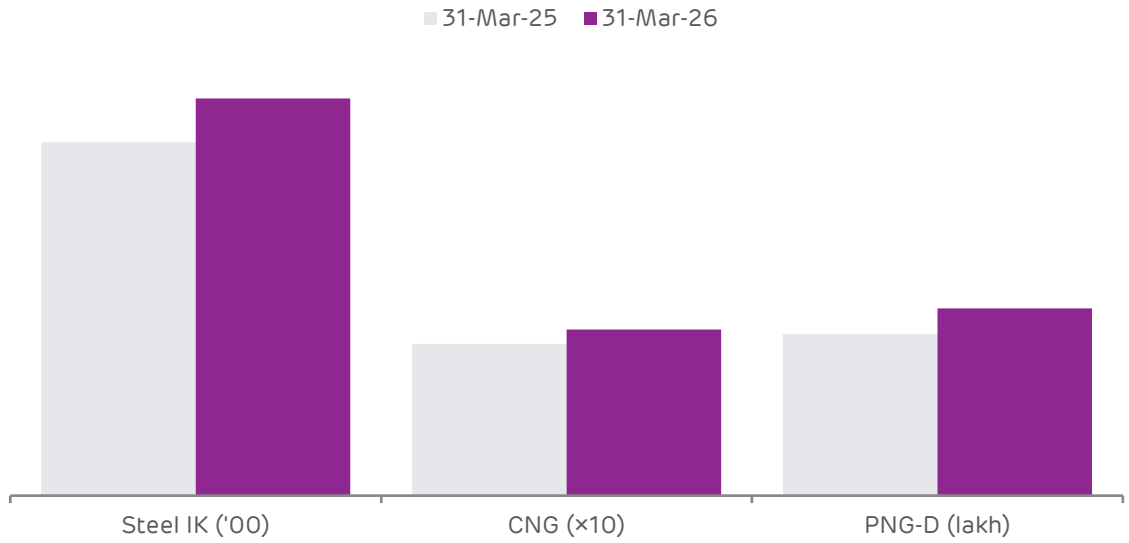
53
Geographies (incl. JV)

~28,000
Steel Inch-KM laid

1,169
CNG stations commissioned

1.3 Mn+
PNG connections (D + I&C)

Network expansion — FY25 → FY26



Steel IK in hundreds, CNG in tens, PNG-D in lakhs for scale.

Source: ATGL Business Immersion 2026 (Infrastructure Updates)

Minimum Work Programme — new GAs (9th & 10th round)

122%
CNG Stations achieved

102%
Steel Inch-KM achieved

Replicable lessons for future GAs

- Advance material readiness enables multi-front execution
- Deploy dedicated resources to accelerate critical GAs
- Digitisation (SOUL, CV-BOM, e-DPR) improves control & billing
- Trenchless-first for congested arterial stretches

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CGD Execution Excellence Framework

EXECUTION EXCELLENCE

01

Planning Excellence

GIS, surveys, route validation, material readiness

02

Technology Adoption

HDD / trenchless, mechanisation, automation

03

Digital Monitoring

SOUL, control tower, e-DPR, drones, dashboards

04

Safety & Quality

PTW, NDT, hydro-test, standardised SOPs

05

Stakeholder Management

Approvals, RoU/RoW, community & contractors

Faster execution • Lower cost/km • Better quality • MWP compliance • Sustainable growth

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Key Takeaways & Way Forward

Key takeaways

- **Plan early — front-loaded GIS, survey & approvals de-risk delivery**
- **Adopt HDD / trenchless wherever feasible in urban corridors**
- **Digitise field execution — SOUL, control tower, weld traceability**
- **Treat safety & quality as execution enablers, not compliance**
- **Build strong stakeholder & authority relationships**
- **Standardise to scale replicable practices across GAs**

Future of CGD construction

- AI-based project controls & predictive analytics
- Drone monitoring & digital twins
- GIS-integrated smart asset management
- IoT-enabled construction & SCADA safety
- Greater standardisation & automation

"Technology + Process Discipline + Safety Culture + Stakeholder Collaboration
= CGD Project Execution Excellence."

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THANK YOU