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IENE Study (M100)

Greece in the Global SMR Supply Chain

Strategic Positioning, Industrial Potential & GIS-Supported Infrastructure Analysis

Athens, August 2026

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The author of the study is Mr. Georgios Papachristos, Mechanical Engineer and a Research Fellow at IENE. The study was prepared within the framework of the Intitute's Research Program on Nuclear Power in SE Europe (NUPOSEE)

Georgios Papachristos *is a nuclear energy strategy and business development professional with 19+ years of international experience across Europe and Asia. He holds an MSc in Energy Law, Business, Regulation and Policy from the International Hellenic University, with a thesis on Policy and Financing Mechanisms for SMR deployment. His engineering foundation includes a BSc in Mechanical Engineering from Fontys University of Applied Sciences (Eindhoven) and a BSc in Product Design Engineering from Hanze University of Applied Sciences (Groningen), both in the Netherlands, with his Mechanical Engineering final thesis completed at Monash University, Australia. Four years as sole European industry representative in South Korea, with executive training at Yonsei University, provided him with direct engagement experience across Asian markets. He was an invited speaker at the 2nd Nuclear Energy Conference in Greece, organised by the Foreign Affairs Institute and NCSR Demokritos, in Athens, in 2025. He serves as Research Fellow at the Institute of Energy for South-East Europe (IENE) and is the lead author of the present report.*

Institute of Energy for South-East Europe (IENE)
3, Alex. Soutsou 3, 106 71 Athens, Greece
Tel.: +0030 210 3628457, 3640278 fax: +0030 210 3646144
web:www.iene.eu e-mail: secretariat@iene.gr

Foreword

This report, Greece in the *Global SMR Supply Chain: Strategic Positioning, Industrial Potential and GIS Analysis*, was conceived, researched and written entirely by Mr. Georgios Papachristos. It enters the public domain at a moment when industrial policy, energy security and geopolitical alignment are reshaping Europe's priorities. In Greece, however, SMRs are still viewed mainly as a future electricity option. This work shows that such limited framing overlooks the essential fact that the SMR transition is an industrial shift. It introduces modular manufacturing, precision engineering and maritime logistics as the core of a new global ecosystem. In this landscape Greece possesses assets far more relevant than commonly acknowledged.

The move from bespoke nuclear construction to factory based serial production is redefining participation in the nuclear renaissance. Industrial capability, fabrication culture, port infrastructure and logistics readiness now determine who contributes to this emerging sector. Greece's shipyards, metallurgical capacity, engineering tradition and strategic maritime position place the country close to the industrial frontier that SMRs are creating. The European Commission's SMR Strategy, Greece's recent political signals and the partnerships with France, South Korea and the United States confirm that the moment is real and the window is open.

The work of Mr Papachristos is exceptional in clarity and depth. It explains with precision what a supply chain means in the SMR context, how it is organized, how qualification operates and how new entrants can participate. It is one of the few analyses in Europe that treats SMRs as a concrete industrial ecosystem rather than an abstract technology. It is offered as a contribution to Greece's strategic thinking, not as a request for support.

This study has not been commissioned, funded or influenced by any government, company or public institution. It is not intended for attracting subsidies, investment solicitation or for promotional use. Any attempt to repurpose it in that direction would contradict its purpose. If institutional protocols recognize independent strategic contributions, this report should be viewed accordingly.

The aim of this report is not to advocate for or against domestic nuclear deployment. That decision requires a different framework. The purpose of the report is to clearly show what Greece already has, what it lacks and what it must do to secure a place in the global SMR supply chain while it is still evolving. The findings are straightforward. Greece's industrial base is relevant. Its geography is advantageous. Its international partnerships are strong. What is missing is coordinated institutional action and a clear national signal that converts potential into active participation.

In short, this report is a roadmap. It describes the moment, the opportunity and the decisions that will determine whether Greece becomes a contributor to the infrastructure through which SMRs are built or remains a spectator while others advance initiatives that distract, delay and fail to serve the country's best interests.

Dr. Yannis Bassias
former President and CEO of HHRM
July 30, 2026

Preface

Until now, Greece's public conversation about nuclear energy has been conducted almost entirely at the level of policy principle: whether nuclear power can be part of the country's energy mix, what the risks are, what the costs might be, and whether public opinion would accept it. These are legitimate questions. They are not, however, the questions this report asks.

The question this report asks is narrower, more specific, and in the author's assessment more immediately consequential: what can Greece's existing industrial base contribute to the global SMR supply chain, and what would need to happen for that contribution to materialise into contracted industrial participation? That question had not been answered systematically for Greece. This report attempts to answer this key question.

The research was conducted independently by the author over a period of several months, drawing on desk research, GIS-supported spatial analysis, sector-by-sector industrial capability assessment, and direct stakeholder consultation with Greek industrial practitioners and international nuclear construction professionals. The analysis and conclusions are the author's own, and responsibility for any errors rests with the author.

At the very outset, it is important to be clear about what this report is not. It is not a recommendation for or against nuclear power generation in Greece: that is a separate question requiring separate preconditions and a separate analytical framework. It is not a government-commissioned study, nor does it represent the position of any public institution. It is not a comprehensive technical assessment of nuclear engineering. Where technical judgments are made, they are grounded in consultation with practitioners who have direct operational experience. Nor is it a promotional document for any company or commercial interest.

The Greek industrial companies referenced in this report were selected solely on the basis of three criteria: their demonstrable relevance to nuclear-grade supply chain participation, the availability of verified public information about their capabilities and operations, and the directness of their connection to the SMR vendor ecosystem or nuclear-adjacent industrial standards. No company referenced in this report was consulted in its preparation in a capacity that could give rise to editorial influence over the analysis or conclusions.

This report is an independent attempt to map a genuinely underexplored opportunity at a moment when the window for acting on it remains measurably open. The global SMR supply chain is being structured now. The EU SMR Strategy has created an institutional architecture that explicitly invites Member State industrial participation. Greece has industrial assets, bilateral relationships, and geographic positioning that are directly relevant to this opportunity. The decisions by government, industry, and the institutions that connect them will determine whether Greece can participate meaningfully in the first phase of Europe's emerging SMR construction cycle over the next two to three years, or whether it will be left behind.

It is the author's hope that this report contributes something concrete to those decisions and helps Greek companies and institutions assess where they may have a credible role in the emerging SMR supply chain.

Georgios Papachristos
Greece, July 2026

Acknowledgements

This report has benefited from the time, expertise, and professional generosity of a number of individuals whose contributions have strengthened its analysis considerably.

Dr. Yannis Bassias, former President and CEO of the Hellenic Hydrocarbon Resource Management S.A., whose academic supervision of the author's MSc research at the International Hellenic University provided the intellectual foundation from which this report grew, offered guidance, critical review, and ongoing encouragement throughout the research process. His willingness to engage with the report's evolving arguments and to open doors that independent research rarely reaches on its own has been indispensable.

Emmanouela Manta, Metallurgical Engineer at SpectrumNDT, and the wider SpectrumNDT team provided frank and valuable practitioner feedback on the realities facing Greek NDT companies seeking nuclear supply chain entry. Their ground-level perspective on the qualification barriers and entry pathways available to nuclear-uninitiated inspection companies added a dimension of operational specificity that desk research alone could not have produced.

Louie Shoukas, Chief Nuclear Officer at PCL Nuclear Management Inc., gave generously of his time in both an extended video call and subsequent written exchange. His practitioner assessment of nuclear supply chain qualification processes, EPC contractor perspectives on new supplier evaluation and independent validation of the Elefsina corridor's fabrication viability for nuclear-grade manufacturing have materially strengthened the report's most consequential claims.

The analysis, conclusions, and any errors contained in this report remain the sole responsibility of the author.

Executive Summary

The Context and the Central Argument

Small modular reactors are entering the Greek public conversation primarily as an energy security question. This report argues that this framing, however understandable, misses the more immediate and commercially significant dimension of what the global SMR industry represents. SMRs are not only a new source of low-carbon baseload power. They are the nucleus of an entirely new industrial ecosystem, one that will generate advanced manufacturing capacity, high-skill employment, export revenue, and technological capability in the countries that position themselves early enough to participate in its construction. Greece has a realistic, near-term opportunity to become a component of the global infrastructure through which SMRs are built, not merely a potential consumer of the power they produce.

This report is the first comprehensive strategic analysis of Greece's SMR supply chain positioning. It was produced at a moment of genuine institutional convergence: on 10 March 2026, the European Commission published its SMR Strategy (COM/2026/117), establishing the most consequential EU nuclear policy framework in a generation, and Prime Minister Mitsotakis delivered his landmark nuclear statement at the 2nd Nuclear Energy Summit in Paris on the same day. The bilateral nuclear technology cooperation declaration signed between Greece and France during President Macron's April 2026 state visit, and the formalisation of the ONEX–Hanwha Ocean cooperation agreement at Elefsina in February 2026, had already signalled industrial-level momentum. On 29 May 2026, the announcement of Project Trident at the US Ambassador's residence in Athens, a trilateral investment framework anchoring the Elefsina shipyard within a US-Greek-Korean industrial alliance, confirmed that three governments have already concluded that this corridor is strategically significant. These events did not create the analysis in this report. They validated its urgency.

The report draws on multi-method research combining systematic desk research, GIS-supported geospatial mapping, sector-by-sector industrial capability assessment, and direct stakeholder consultation. **Its purpose is not to recommend whether Greece should build a nuclear power plant.** That is a separate question requiring separate preconditions. The purpose is to assess, rigorously and with specificity, what Greece's existing industrial base offers to the global SMR supply chain, how Greece compares to its regional peers, and what policy, institutional, and commercial actions are required to convert latent industrial potential into contracted supply chain participation.

The Global Market Context and the Supply Chain Imperative

The nuclear renaissance is no longer a policy aspiration, it is an industrial procurement reality. Global nuclear generating capacity reached an all-time high in 2024, with over 440 reactors operational producing nearly 397 GWe and more than 70 additional units under construction. The IEA's Announced Pledges Scenario projects nuclear capacity more than doubling by mid-century, with annual investment reaching USD 120 billion by 2030. For SMRs specifically, the NEA projects a global market that could reach 375 GW of installed capacity over the next three decades. The Declaration to Triple Nuclear Energy, now signed by 33 countries and endorsed by more than 140 industry companies and 16 major financial institutions, has created the political architecture that makes private capital deployment rational.

The EU SMR Strategy projects total European SMR capacity of 17 to 53 GW by 2050, with associated investment requirements of €241 billion. The Strategy does not merely facilitate this investment: it explicitly mandates strengthening local supply chains and ensuring European added value in all SMR projects, creating a direct institutional framework for the industrial analysis this report presents. The Strategy has simultaneously established the SMR

Coalition, the European Industrial Alliance on SMRs, and the SMR Valley designation mechanism, structural instruments through which Member State industrial participation is invited, coordinated, and financed.

The supply chain logic of this transition is critical to understanding Greece's position. The economic case for SMRs rests on the shift from bespoke, site-built nuclear construction to standardised, factory-based serial manufacturing, a model that resembles shipbuilding far more than it resembles conventional nuclear construction. Vendors are explicitly seeking industrial partners with precision fabrication, heavy engineering, quality-managed manufacturing, and maritime logistics capabilities. This is not a technology in which Greece is a stranger.

Greece's Industrial Capabilities: A Tiered Assessment

Greece enters this analysis from the most constrained regulatory and operating position of any country in the Southeast European peer group. There is no operational nuclear power plant, no dedicated nuclear regulator, and no domestic supply chain with nuclear-grade certification. The report's central analytical contribution is to demonstrate that these institutional absences, which are real, do not preclude near-term supply chain participation, and that the industrial capabilities, which do exist, are more directly relevant to the SMR supply chain than any prior analysis has established.

The industrial assessment identifies capabilities across four tiers. The first comprises assets immediately applicable to non-nuclear SMR supply chain roles without certification investment: civil engineering and large-scale project delivery, maritime logistics and port infrastructure, balance-of-plant electrical systems, and non-nuclear-grade structural steelwork. Greek civil engineering and EPC contractors, GEK TERNA, INTRAKAT, METKA, operate under demanding EU procurement quality frameworks and have delivered complex multi-contractor energy infrastructure comparable in project management intensity to nuclear civil works.

The second tier comprises capabilities applicable to nuclear supply chain participation within a three-to-five-year certification investment horizon. Corinth Pipeworks, whose ISO 9001 quality management system is already calibrated to ASME B31.12 high-specification energy sector standards, is the most technically prepared candidate for ISO 19443 certification and eventual N-stamp qualification in primary and secondary circuit piping. Hellenic Cables produces high-specification cables serving the most demanding energy infrastructure environments and is positioned for balance-of-plant and potentially safety-system applications. SpectrumNDT operates advanced non-destructive testing capabilities, including radiographic, ultrasonic, and phased-array inspection services in safety-critical marine and energy environments, placing it in a shorter qualification horizon than any other Greek company identified in this assessment.

The Skaramagkas-Elefsina industrial corridor constitutes Greece's single most strategically significant supply chain asset. The Elefsina shipyard, operating under a USD 125 million US Development Finance Corporation loan and now anchored by the Hanwha Ocean partnership under Project Trident, possesses the heavy fabrication capacity, deep-water port access, and industrial footprint that SMR module manufacturing and maritime export logistics require. The HD Hyundai Heavy Industries MoU at Skaramagkas, formalised at Poseidonia 2026, anchors the corridor from the opposite end. Both Hanwha Ocean and HD Hyundai Heavy Industries are subsidiaries of Korean conglomerates whose industrial culture was built through the KEPCO domestic nuclear programme and the APR-1400 export deployment in the UAE. The nuclear quality culture arriving at these facilities through Korean industrial partnerships is not something that needs to be retrofitted. It is present, contractually and operationally, now.

METLEN Energy & Metals occupies the most structurally proximate position to nuclear supply chain participation of any Greek industrial company. Its signed strategic MoU with Naval Group, co-developer of France's NuWard SMR programme, currently in the most advanced multi-jurisdictional regulatory review of any European SMR design, places Greece's largest industrial conglomerate within the institutional ecosystem of a programme structuring its deployment-phase supply chain. The 70-plus Greek companies operating within Naval Group's Hellenic Industrial Participation framework represent a pre-qualified defence industrial network whose quality management credentials, while not nuclear-grade, constitute the most advanced collective baseline from which an ISO 19443 qualification campaign can be launched in Greek industry.

Regional Peer Benchmarking: Greece's Competitive Position

The comparative assessment of Greece against its four primary regional peers, Romania, Poland, Bulgaria, and Türkiye, reveals both the scale of the gap that exists in nuclear heritage terms and the structural advantages that partially offset it.

Romania is the most advantaged country in the peer group by a significant margin. Its Cernavodă CANDU reactors have operated for over 26 years, its nuclear regulator CNCAN is internationally respected, and the Final Investment Decision taken by Nuclearelectrica shareholders in February 2026 for the Doicești NuScale VOYGR-6 project makes Romania the only EU country to have moved from SMR policy to implementation. Bulgaria's two VVER-1000 reactors at Kozloduy, operational since 1987 and 1991, provide a similarly deep regulatory and industrial heritage base, and the expected FID for Kozloduy Units 7 and 8 in the second half of 2026 will generate the most immediate near-term procurement pipeline for supply chain participation in the regional peer group. Poland combines the strongest government political commitment in the EU after France with the most significant qualification gap, its industrial companies have supplied nuclear programmes internationally but not domestically under full regulatory oversight. Türkiye, uniquely among this peer group, has already delivered a nuclear power plant to operating status, qualified more than 400 companies to nuclear-grade standards, and is systematically converting buyer-phase experience into independent industrial and export capability.

Greece's competitive position is characterised accurately in this report as constrained in nuclear heritage terms and advantaged in industrial, geographic, and institutional terms. Its EU and Euratom membership provides the regulatory and financing access that neither Türkiye nor any candidate country can replicate. Its maritime infrastructure, Piraeus, Elefsina, Salamis, Syros, positions it as the natural logistics and staging hub for the Southeast European nuclear cluster that will span Romanian, Bulgarian, and eventually Greek and Turkish programmes. Its geographic position at the intersection of EU, NATO, and Eastern Mediterranean strategic architecture provides a geopolitical differentiation that no inland Central European comparator can offer. The DFC investment in Elefsina, the 3+1 Energy Ministerial framework, and the Alexandroupolis LNG partnership constitute a documented bilateral US-Greece relationship depth that no peer country in the Southeast European group can match. The Dual EU-US Track, simultaneous engagement with the EU SMR Strategy architecture and the US FIRST programme, is Greece's unique strategic positioning and its most differentiating near-term competitive advantage.

GIS-Supported Infrastructure Analysis: Key Findings

The GIS analysis, conducted using QGIS 3.44 Solothurn on publicly available spatial datasets, constitutes the first systematic spatial mapping of Greek industrial assets relevant to the SMR supply chain. Three principal findings emerge.

The Skaramagkas-Elefsina corridor functions as the geographical concentration point of Greece's first and second-tier supply chain capabilities. The combination of deep-water port access, heavy fabrication infrastructure, adjacent industrial zone density, and direct motorway connectivity to Piraeus creates a logistics spine with no equivalent in the Southeast European peer group for SMR module staging and maritime export. The proximity of the National Technical University of Athens adds the academic and engineering research dimension that a functioning industrial cluster requires.

The energy grid mapping demonstrates that Greece's high-voltage transmission infrastructure provides adequate connectivity for large industrial loads at the key supply chain sites, with the corridor's proximity to 400 kV substations reducing one of the key site development cost barriers. The regional context mapping confirms Greece's hub positioning: the combination of Aegean, Eastern Mediterranean, and Black Sea maritime access places Greek port infrastructure within viable logistics distance of every major nuclear project currently in the active Southeast European pipeline, Romania's Doicești, Bulgaria's Kozloduy Units 7 and 8, and the emerging programmes in the Eastern Mediterranean.

Policy and Programme Framework

The EU SMR Strategy creates four specific instruments through which Greece can convert industrial potential into institutional participation: Coalition membership, European Industrial Alliance on SMRs registration, SMR Valley designation, and access to the InvestEU nuclear guarantee window and Innovation Fund SMR deployment calls. Coalition membership is the most time-critical: founding participants shape the working group structures, design-track priorities, and regulatory alignment frameworks that will govern European SMR deployment for the next decade. The window for founding participation is open now and will narrow as the Coalition's governance architecture solidifies.

The case for designating the Skaramagkas-Elefsina corridor as Greece's candidate SMR Valley under Action 6 of the EU SMR Strategy is, in this assessment, the most analytically credible available to any Southeast European Member State. No other candidate corridor in the region combines a DFC-backed fabrication anchor, Korean nuclear-adjacent industrial partnerships, an adjacent concentrated supply chain industrial zone, deep-water maritime export infrastructure, and direct connectivity to a major European port in a single geographic footprint.

The US FIRST programme, Foundational Infrastructure for Responsible Use of SMR Technology, represents the single most accessible instrument available to Greece for bridging the institutional and industrial gap between its current nuclear readiness position and commercial supply chain participation. Greece is not currently a FIRST partner country. This is the most specific and immediately correctable institutional gap identified in this report. The DFC's existing relationship with Elefsina, the 3+1 Energy Ministerial framework, and the Alexandroupolis partnership constitute documented bilateral relationship depth that every formal FIRST country activation requires and that no other Southeast European candidate can replicate to the same degree. The operational entry point is a formal ministerial letter from the Minister of Environment and Energy to the US Ambassador in Athens, a step that requires political will and a letter, not a deployment decision or a regulatory framework.

For Greek industry, the ISO 19443 nuclear supply chain quality management standard represents the single most actionable near-term qualification step. For a company already operating under a mature ISO 9001 system, the realistic preparation timeline from gap analysis to certification is 18 to 36 months, at an investment typically in the range of €80,000 to €250,000, modest relative to the contract values that certification unlocks. The proposed Greek Nuclear Supply Chain Qualification Programme (GR-NSCQP), detailed in Section 6.3.5, provides the structured institutional vehicle through which this qualification investment can be co-financed through European Regional Development Fund(ERDF), the Cohesion

Fund, InvestEU, Euratom Research and Training Programme, and Hellenic Development Bank instruments that already exist and require policy activation rather than new institutional invention.

Strategic Recommendations

The report's recommendations are organised into two tracks, for the Greek government and for Greek industry, and are sequenced by the time horizon within which each can be initiated rather than by strategic importance, which is roughly equal across the principal actions. The defining principle underlying all of them is the same: supply chain participation and domestic deployment are separate decisions requiring separate preconditions, and the former need not, and should not, wait for the latter.

For the Greek Government, five actions are recommended. The most consequential single step, achievable within the current parliamentary mandate at no budgetary cost, is a formal ministerial declaration that nuclear supply chain participation is a strategic industrial objective for Greece, a stand-alone priority pursued as a matter of industrial policy independent of any domestic deployment decision. This declaration provides the demand signal that makes individual company qualification investment rational and provides the political licence that Enterprise Greece, the Hellenic Development Bank, and European funding bodies need to co-finance the associated qualification infrastructure. Coalition accession under Action 8 of the EU SMR Strategy, identifying Greece's technology track should be treated as the first concrete output of the ministerial evaluation committee, achievable within weeks of that committee's technology orientation conclusion. FIRST programme engagement should be initiated through a formal ministerial letter to the US Ambassador in Athens, followed by a USTDA feasibility study grant application by end-2027. A National Nuclear Readiness Assessment, conducted under the aegis of the ministerial committee with EEAE, Enterprise Greece, and SEV participation, would provide the government-commissioned supply chain capability register that vendor qualification conversations and international financing applications require. The SMR Valley designation proposal for the Skaramagkas-Elefsina corridor should be prepared and submitted to DG ENER and DG GROW by mid-2028, timed to coincide with the Commission's implementation of the Net-Zero Industry Act's strategic project designation mechanism.

For Greek industry, the single most urgent action, executable immediately and independently of any government decision, is the initiation of ISO 19443 gap analysis by the companies identified as most immediately positioned for qualification: SpectrumNDT, Corinth Pipeworks, ONEX Shipyards, Hellenic Cables, and METLEN's Sustainable Engineering Solutions division. Gap analysis does not require government co-financing to initiate. Companies that wait for the financing framework to be established before beginning their qualification journey will lose 12 to 18 months against a procurement calendar that does not allow for that delay. The formation of a Greek Nuclear Supply Chain Consortium, a coordinating body presenting a unified Greek industrial interface to SMR vendors, EU institutions, and international financing bodies, should be treated as a 2026-2027 deliverable. The Consortium's first substantive output, a Greek Nuclear Supply Chain Capability Register mapping member capabilities against the supply chain tier structure, is the single most important commercial instrument the Consortium can produce. Vendor portal registration with Rolls-Royce SMR and GEH BWRX-300 Alliance working group membership should proceed in parallel with gap analysis and Consortium formation, not after them.

The METLEN-Naval Group and ONEX-Hanwha agreements should be used actively and explicitly in every vendor qualification conversation, every EU institution engagement, and every financing dialogue. They are the answer to the most common objection Greek industry will encounter, that Greece has no nuclear track record, because they constitute documented evidence that Greek industrial actors have already been assessed, approved, and contracted by two of the most demanding industrial standards organisations in the defence and energy sectors. In the NEA's supply chain readiness framework, they represent the demonstrated industrial track record in directly adjacent disciplines that constitutes the minimum evidential threshold for vendor qualification engagement.

The 2026–2031 Roadmap

The proposed roadmap translates the recommendations into a three-track action plan, government, industry, and international engagement, structured around the recognition that these tracks must advance in parallel. A government Coalition accession unaccompanied by industry qualification investment generates no supply chain contracts. An industry certification programme unanchored by a government policy signal will not attract the co-financing that makes it commercially rational.

The outer boundary of the roadmap, 2031, is not arbitrary. The EU SMR Strategy targets first European SMR units operational by the early 2030s. Romania's Doicești programme targets its first module in commercial operation in 2033. The Bulgarian Kozloduy Units 7 and 8 FID is expected in the second half of 2026, with construction mobilisation to follow. The Rolls-Royce SMR UK fleet and Czech Republic ČEZ programme are both targeting early-2030s deployment. These are the procurement windows within which Greek supply chain participation must be established if it is to form part of the first European SMR construction cycle. A country that has not achieved ISO 19443 certification, established vendor relationships, and demonstrated institutional commitment by 2029 will find the supply chain architecture of that cycle already fixed.

The roadmap acknowledges that the starting point is not a clean slate. As of mid-2026, the foundational political, bilateral, and industrial triggers have already fired. The clock is running.

Conclusions

What Greece currently lacks is not industrial capability, not geographic positioning, not bilateral relationships, and not financing instruments. What it lacks is the institutional coordination and the government policy signal that converts latent industrial potential into organised supply chain participation.

The core finding of this report is unambiguous: Greece's SMR supply chain participation is not a distant aspiration contingent on a domestic deployment decision that may be a decade away. It is a near-term, commercially viable opportunity available to Greek industrial actors now, through existing qualification pathways, existing vendor engagement mechanisms, and existing bilateral and multilateral frameworks, provided the necessary actions are taken within a window that is measured in months and years, not decades.

The convergence of circumstances that makes this moment genuinely exceptional will not persist indefinitely. The EU SMR Strategy has established, for the first time, a comprehensive European institutional architecture for SMR deployment with explicit provision for founding Member State participation. The Prime Minister's Paris statement has created the political authorisation for Greek institutional actors to move. The ONEX-Hanwha agreement and Project Trident have created a concrete, funded, internationally credible heavy fabrication asset in Elefsina. The METLEN-Naval Group MoU has placed Greece's largest industrial company inside the institutional ecosystem of Europe's most advanced SMR licensing programme. These elements do not often arrive simultaneously.

The supply chain geography of the first European SMR construction cycle is being drawn now. The lines, once drawn, are not easily redrawn. The question for Greece is not whether the opportunity exists. The question is whether Greece will act with the speed and institutional purposefulness the moment demands, or whether it will still be deliberating when the first European SMR supply chains are already built, contracted, and closed to new entrants.

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List of Abbreviations

AMR	Advanced Modular Reactor
APS	Announced Pledges Scenario (IEA)
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
BOO	Build-Own-Operate
BPVC	Boiler and Pressure Vessel Code (ASME)
CEA	Commissariat à l'Énergie Atomique et aux Énergies Alternatives (France)
CFSI	Counterfeit, Fraudulent and Suspect Items
CNCAN	National Commission for Nuclear Activities Control (Romania)
CNNC	China National Nuclear Corporation
DOE	US Department of Energy
DFC	US International Development Finance Corporation
EDF	Électricité de France
EDRF	European Regional Development Fund
EIA SMR	European Industrial Alliance on Small Modular Reactors
EIB	European Investment Bank
ENEC	Emirates Nuclear Energy Corporation
EPC	Engineering, Procurement and Construction
ESPA	Partnership Agreement — Greek Structural Funds (ΕΣΠΑ)
FEED	Front-End Engineering and Design
FID	Final Investment Decision
FIRST	Foundational Infrastructure for Responsible use of SMR Technology (US State Department)
FOAK	First-of-a-Kind
FSRU	Floating Storage and Regasification Unit
GDA	Generic Design Assessment (UK)
GIS	Geographic Information System
GR-NSCQP	Greek Nuclear Supply Chain Qualification Programme
HIP	Hellenic Industrial Participation (Naval Group programme)
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IMEC	India-Middle East-Europe Economic Corridor
INIR	Integrated Nuclear Infrastructure Review (IAEA)
IPCEI	Important Project of Common European Interest

ISO	International Organisation for Standardisation
ITNS	Items Important to Nuclear Safety
LNG	Liquefied Natural Gas
MoU	Memorandum of Understanding
NDE	Non-Destructive Examination
NDT	Non-Destructive Testing
NEA	Nuclear Energy Agency (OECD)
NOAK	Nth-of-a-Kind
NPP	Nuclear Power Plant
NQA-1	Nuclear Quality Assurance-1 (ASME standard)
NRC	Nuclear Regulatory Commission (US)
NZIA	Net-Zero Industry Act (EU)
ONR	Office for Nuclear Regulation (UK)
PAUT	Phased Array Ultrasonic Testing
PDI	Performance Demonstration Initiative (ASME)
PPP	Public-Private Partnership
RCC-M	Design and Construction Rules for Mechanical Components (French nuclear standard)
SEV	Hellenic Federation of Enterprises (Σύνδεσμος Επιχειρήσεων και Βιομηχανιών)
SMR	Small Modular Reactor
SPRING	SMR Pan-Regional Interest Nuclear Group
TEN-T	Trans-European Transport Network
USTDA	US Trade and Development Agency
WNA	World Nuclear Association

Chapter 1. Introduction

1.1 Context and Motivation

The global energy system is at an inflection point. In 2024, for the first time in history, 40% of global electricity generation came from renewables and nuclear power combined, with renewables and nuclear together providing 80% of the growth in global electricity output that year (1). This structural shift reflects the accelerating pressure of decarbonisation commitments, energy security imperatives sharpened by geopolitical disruption, and the growing recognition that the energy transition requires every available low-carbon technology, not a selective portfolio that excludes politically inconvenient options.

Nuclear energy sits at the center of this recalibration. After three decades of relative stagnation in Western markets, the period sometimes described as the "nuclear winter", during which limited new construction eroded the global supply chain, contracted the nuclear workforce, and left an entire generation of expertise untransferred, nuclear is experiencing a genuine renaissance (2). The signal is unmistakeable: at the COP28 summit in Dubai in 2023, more than twenty countries pledged to triple global nuclear capacity by 2050, a commitment since endorsed by over 120 energy companies and 25 nations (3). The International Energy Agency has warned that failure to invest in new and existing nuclear plants would make the energy transition harder and more costly (4). Governments across the United States, United Kingdom, France, Canada, Poland, Romania, and a growing number of European and emerging market nations have placed nuclear at the center of their long-term energy strategies.

The technology that has catalysed this renewed momentum is the Small Modular Reactor, a fundamentally different proposition than the large, gigawatt-scale nuclear power plants (NPP). SMRs, defined as reactors with an output of up to 300 MWe per unit, are designed to be factory-manufactured in standardised modules, transported to site, and assembled for deployment. Their reduced physical footprint, passive safety systems, scalable capacity, and shorter construction timelines address the principal objections that have historically made nuclear energy prohibitively expensive and slow to deploy (5). They can complement renewable energy sources by providing dispatchable, carbon-free baseload power; supply industrial heat for hard-to-abate sectors; support green hydrogen production; and electrify remote or island communities. For the first time, nuclear energy is becoming a technology that can be deployed at scales and in locations that large reactors never could. These characteristics explain why SMRs are attracting global market interest and why supply chains are being built to support them, regardless of whether any individual country decides to host a reactor.

The policy architecture to support this transition has accelerated sharply in early 2026. On 10 March 2026, the European Commission published its SMR Strategy, COM/2026/117, the most significant EU nuclear policy document in a generation. The Strategy projecting total EU SMR capacity of 17 to 53 GW by 2050 and identifying €241 billion in associated investment requirements (6). The Strategy explicitly mandates strengthening local supply chains and ensuring European added value in all SMR projects, creating a direct institutional framework for the analysis presented in this report. The same day, on the same platform, the 2nd Nuclear Energy Summit in Paris, Greek Prime Minister Kyriakos Mitsotakis delivered a landmark statement that marked a decisive shift in Greek energy policy (7). "Greece is turning a page," he declared. "The time has come for my country to examine whether nuclear energy, and specifically small modular reactors, can play a role in the Greek energy mix." He announced the formation of a high-level ministerial committee to assess whether SMR technology can be integrated into the Greek energy system, described Greece as a "friend of nuclear energy," and called Europe's long-standing hesitation toward nuclear a "strategic mistake." He also highlighted nuclear technology's potential for maritime decarbonisation, a dimension of particular strategic importance for Greece as the world's largest ship-owning nation.

The convergence of these two events on a single date reflects a broader European and global momentum that has been building for years and has now reached a policy threshold. It also defines the precise moment in which this report is produced and the window of opportunity it seeks to illuminate.

Greece arrives at this moment from a distinctive starting position. The country has invested heavily in renewable energy and today generates more than half of its electricity from solar and wind, having transformed itself from a net electricity importer to an exporter (8). It has no operating nuclear power plant, no domestic nuclear regulatory track record for power reactors, and no history of nuclear industrial manufacturing. In conventional terms, Greece appears to be a country watching the nuclear renaissance from the outside. However, a closer examination of what the SMR supply chain actually requires, and what Greece already possesses, reveals a fundamentally different picture.

The economic case for SMRs rests on the transition from bespoke, site-built nuclear construction to standardised, factory-based serial manufacturing, a model that resembles shipbuilding far more than it resembles traditional nuclear construction. This is the literal economic logic that vendors, investors, and policymakers are applying to SMR deployment. In addition, Greece is, by any measure, one of the world's foremost maritime and shipbuilding nations. Its port infrastructure, marine engineering capabilities, precision fabrication expertise, and industrial quality systems, accumulated across decades of serving the global shipping industry, are directly relevant to the modular manufacturing paradigm that SMR deployment demands. Greek companies are already demonstrating this relevance in practice. ONEX Shipyards, operating the Elefsina facility with US strategic investment backing, has entered a partnership with South Korea's Hanwha Ocean; and METLEN has signed a strategic MoU with Naval Group, a founding co-developer of France's NuWard SMR programme. Both partnerships are examined in detail in Section 3.

This report proceeds from a central argument: that Greece's participation in the global SMR supply chain is a near-term, commercially viable opportunity grounded in existing industrial assets, live institutional relationships, and a rapidly maturing European policy framework that explicitly invites exactly the kind of national industrial contribution this report maps. The question is not whether Greece can participate. The question is whether Greece will act with sufficient speed and intent to secure its position before the supply chain architecture is fixed and the window for new entrants narrows

The report addresses this question through three interlocking lines of analysis. A systematic assessment of Greek industrial capability and its relevance to SMR supply chain tiers. Original GIS-supported spatial mapping of Greek infrastructure assets for supply chain logistics. Finally, a policy and programme framework analysis covering both the European and American tracks, the EU SMR Strategy, the European Industrial Alliance on SMRs, and the US FIRST programme, through which Greece can translate industrial potential into concrete international engagement. Together, these constitute the first comprehensive strategic analysis of Greece's SMR supply chain positioning, produced at the moment when that analysis is most urgently needed.

1.2 Scope and Objectives

This report addresses a specific and deliberately bounded question: what is Greece's realistic potential contribution to the global SMR supply chain, and what conditions, industrial, policy, regulatory, and commercial, are required to realise it.

This report does not assess whether Greece should build a nuclear power plant. The distinction matters because supply chain participation and domestic deployment are not the same decision, and they do not require the same preconditions. A country can become a meaningful contributor to the global SMR supply chain, manufacturing components, providing inspection services, hosting logistics and staging infrastructure, supplying construction and civil engineering expertise, without having made any commitment to host an SMR on its own territory. Indeed, the countries that will be best positioned to host SMRs in the future are likely to be those that have spent the preceding years building their industrial and institutional capabilities through supply chain engagement. Supply chain participation is the foundation upon which deployment readiness is built.

With this framing established, the report addresses three interlocking analytical questions. The first is the capability question: what does Greece's existing industrial base actually offer to the SMR supply chain? This requires a systematic sector-by-sector assessment of Greek manufacturing, engineering, inspection, logistics, and port infrastructure capabilities, evaluated against the specific tier-by-tier requirements of SMR component production and assembly. The GIS analysis presented in Section 5 translates this capability assessment into spatial evidence, identifying where in Greece the relevant industrial assets are concentrated and how they relate to energy grid infrastructure, and transport connectivity

The second is the positioning question: how does Greece compare to its regional peers, and where does its competitive advantage lie? Romania, Poland, Bulgaria, and Turkey are all navigating their own nuclear ambitions with varying degrees of industrial maturity, government commitment, and international partnership. Understanding Greece's position relative to this regional landscape, honestly, including its gaps, is essential for identifying the strategic narrative that is credible rather than aspirational.

The third is the activation question: what policy actions, regulatory developments, international programme engagements, and commercial relationships are required to convert industrial potential into actual supply chain participation? This is ultimately the most important question, because capability without activation generates no economic value. The report addresses this through an analysis of the EU SMR Strategy's specific mandates for Greece, the US FIRST programme as an untapped bilateral opportunity, and a concrete qualification pathway for Greek industry grounded in ISO 19443 and N-Stamp, and the experience of comparable international case studies.

The report is addressed to four primary audiences, each of whom will find different sections most directly relevant to their needs. Greek and European policymakers will find Sections 3, 4, and 6 most pertinent, particularly the analysis of Greece's policy response requirements and the concrete recommendations for government action. International SMR vendors and their supply chain development teams will find Sections 3 and 5 most useful, the industrial capability assessment and GIS analysis provide the spatial and sectoral intelligence that supply chain teams require when evaluating new market entry. Greek industrial companies and their leadership will find Sections 3, 4 and 6 most actionable, particularly the qualification pathway analysis and the recommended timeline for engagement. Investors and development finance institutions will find Sections 4 and 7 most relevant to their assessment of Greece's nuclear industrial investment landscape.

Throughout, the report maintains a consistent standard of evidence. Claims about Greek industrial capability are grounded in documented company activities, publicly available agreements, and direct stakeholder engagement. The GIS analysis is based on open-source spatial datasets with full methodology documentation in Appendix A. Policy and programme analysis draws on primary sources, official EU and US government publications, rather than secondary commentary. Where information was unavailable, uncertain, or subject to commercial confidentiality, this is noted explicitly rather than obscured.

1.3 About This Report

This report was produced independently by Georgios Papachristos in a personal research capacity. It does not represent the position of any institution, employer, government body, or affiliated organisation. The views, analysis, and recommendations contained herein are those of the author alone.

The research draws on the author's MSc in Energy Law, Business, Regulation and Policy from the International Hellenic University, Thessaloniki, completed under the supervision of Dr. Yannis Bassias, former President and CEO of the Hellenic Hydrocarbon Resources Management. The MSc dissertation, "Policy and Financing Mechanisms for SMR Deployment: A Roadmap for Market Adoption", and the “SMR Deployment Handbook” provides the foundational policy and financing framework that informs the analysis in this report, particularly in Sections 2 and 6. The current report extends and applies that framework to a specific national and geographic context, drawing on new primary research that was outside the scope of the dissertation. The author has additionally co-published on SMR deployment and the coal-to-nuclear transition in Europe through energia.gr, and has presented at the 2nd Nuclear Energy Conference in Greece, co-organised by the Foreign Affairs Institute and NCSR Demokritos in Athens in November 2025. The supply chain report presented here was developed in response to what those engagements consistently revealed: that while the policy and financing dimensions of SMR deployment in Europe were receiving growing analytical attention, the specific industrial and geographic positioning of Greece within the emerging supply chain remained entirely unmapped. This report is an attempt to fill that gap.

The research was conducted between December 2025 and June 2026 and incorporates the most significant recent policy developments in the field, including the EU SMR Strategy published on 10 March 2026 and the Greek Prime Minister's nuclear announcement delivered the same day at the 2nd Nuclear Energy Summit in Paris. These developments occurred during the report's preparation period and have been fully integrated into the analysis rather than treated as background context

Stakeholder consultations were conducted with a selection of Greek industrial companies and institutional contacts whose work is directly relevant to the report's subject matter. Where individuals and organisations have agreed to be identified, they are named in the relevant sections and in the Stakeholder Consultation Register at Appendix C. Where confidentiality was requested, contributions are reflected in the analysis without attribution. The author is grateful to all who gave their time and expertise.

The GIS analysis presented in Section 5 was conducted using open-source data and QGIS software. Full documentation of data sources, processing methodology, and analytical limitations is provided in Appendix A.
This report is published in English. The choice of language is deliberate: the report's primary purpose is to communicate Greece's SMR supply chain potential to the international audiences, EU institutions, US government agencies, SMR vendors, and development finance institutions, for whom English is the working language of the nuclear industry. A Greek-language executive summary is available separately for domestic government and industry audiences.

1.4 Methodology

This report employs a multi-method research design combining systematic desk research, original geospatial analysis, industrial capability mapping, and stakeholder consultation. The integration of these four methods reflects the report's dual purpose: to provide rigorous analytical foundations for its conclusions, and to produce outputs, particularly the GIS maps and the industrial capability assessment, that are practically useful to the policymakers, vendors, and industrial actors for whom the report is intended.

1.4.1 Desk Research and Literature Review

The foundational layer of the research is a structured review of primary and secondary sources across four domains. The first is the global SMR technology and market landscape, drawing on publications from the International Atomic Energy Agency, the OECD Nuclear Energy Agency, the World Nuclear Association, and major SMR vendors. The second is the international and EU policy framework, with particular attention to the European Commission's SMR Strategy (COM/2026/117), the European Industrial Alliance on SMRs Strategic Action Plan 2025–2029, the Net-Zero Industry Act, the Euratom Research and Training Programme 2026–2027, and the US State Department's FIRST programme documentation. The third is the nuclear supply chain literature, encompassing vendor supply chain publications, industry qualification standards including ISO 19443 and the ASME N-stamp framework, and international case studies of industrial supply chain entry. The fourth is the Greek industrial, energy, and policy landscape, drawing on corporate publications, government documents, regulatory filings, news sources, and publicly available agreement documentation, including the ONEX-Hanwha Ocean partnership, the METLEN-Naval Group MoU, and the Greek Prime Minister's statements at the 2nd Nuclear Energy Summit in Paris

Desk research was conducted between December 2025 and June 2026. Given the pace of development in the SMR policy space during this period, the EU SMR Strategy, the Greek government announcement, and the Euratom 2026–2027 work programme were all published during the report's preparation, the literature review was treated as a continuous process rather than a discrete phase, with findings updated as new material became available.

1.4.2 GIS-Supported Spatial Analysis

The geospatial analysis constitutes the most distinctive methodological contribution of this report. It was conducted using QGIS 3.44 Solothurn open-source software and draws exclusively on publicly available spatial datasets, ensuring full reproducibility. The supply chain suitability analysis, the following data layers were compiled and processed: Greek port and shipyard locations and capacities; active industrial zones and manufacturing clusters; high-voltage electricity grid infrastructure and substation locations; road and rail transport connectivity networks.

1.4.3 Industrial Capability Mapping

The assessment of Greece's industrial capabilities relevant to the SMR supply chain in Section 3 is based on a structured mapping exercise conducted across five industrial sectors: shipbuilding and marine engineering, non-destructive testing and inspection services, defence manufacturing, civil and structural engineering, and port and logistics infrastructure

For each sector, the mapping examined three dimensions. The technical capabilities currently deployed in the sector and their degree of overlap with nuclear supply chain requirements. The quality management systems and certifications already held, with particular attention to those adjacent to nuclear-grade standards. Finally, the commercial relationships and international partnerships already established, as evidence of the sector's capacity to operate within complex, multi-jurisdictional supply chains.

This assessment draws on a combination of publicly available corporate information, industry association data, government publications, and direct stakeholder consultation. Where company-specific capabilities are described, this is based on information that is either publicly available or has been shared with the author's consent. No commercially sensitive or confidential information has been included without explicit permission.

The assessment is necessarily bounded by available information. The Greek industrial landscape is not uniformly documented, and some sectors, particularly small and medium-sized manufacturers who may have significant nuclear-adjacent capabilities, are likely to be underrepresented in the analysis. The report should therefore be read as a first systematic mapping of this territory rather than an exhaustive inventory. One of its intended functions is to stimulate further, more granular sector-specific assessments by the organisations best positioned to conduct them.

1.4.4 Stakeholder Consultation

Structured consultations were conducted with a selection of Greek industrial companies and institutional contacts whose activities are directly relevant to the report's subject matter. Consultations took the form of telephone conversations, video calls, and written exchanges, and addressed three primary questions: the current state of each organisation's capabilities and activities relevant to the nuclear supply chain; their assessment of the opportunities and barriers facing Greek industry in this space; and any information they were willing to share about their sector's broader landscape and relevant contacts.

The consultation process was designed to complement rather than substitute for desk research. Stakeholders were not asked to validate the report's conclusions, they were asked to contribute factual information and practitioner perspective that desk research alone cannot provide. The distinction between information provided by stakeholders and the author's own analysis is maintained throughout the report.

1.4.5 Limitations

Three limitations of the methodology warrant explicit acknowledgment.The first is data availability. The GIS analysis relies on open-source datasets of varying resolution and currency. Where data gaps were identified, particularly for some Greek industrial infrastructure, conservative assumptions were applied and limitations noted in Appendix A..

The second is the pace of change in the subject matter. The SMR policy landscape moved significantly during the report's preparation period. While every effort has been made to ensure the analysis reflects developments up to the date of publication, the field is evolving rapidly and some details, particularly regarding vendor supply chain programme specifications and EU funding call timelines, may have developed further since the research was completed.

The third is the inherent uncertainty of industrial potential assessment. Determining whether a Greek company or sector is capable of meeting nuclear supply chain requirements involves judgements about technical capability, organisational readiness, and commercial appetite that are not always reducible to publicly available information. Where such judgements have been made, the basis for them is stated explicitly and readers are encouraged to treat the assessment as a starting point for more detailed sector-specific analysis rather than a definitive conclusion.

Notwithstanding these limitations, the methodology applied is sufficient to support the report's central analytical purpose: to provide a rigorous, evidence-based first assessment of Greece's SMR supply chain potential that is useful to the policymakers, industrial actors, and international partners for whom it is intended.

> **Note:** *This report draws on the author's MSc thesis 'Policy and Financing Mechanisms for SMR Deployment: A Roadmap for Market Adoption' (IHU, 2025) as a foundational policy reference.*

Chapter 2. Global SMR Landscape: Technology, Market & Supply Chain

2.1 SMR Technology Overview

SMRs are defined as small modular reactors with an output range from 20 MWe, up to maximum 300 MWe. SMRs can produce 7.2 million kWh per day, compared to large-size

Nuclear power plants with an output of over 1,000 MWe capable of producing 24 million kWh per day. They are using a range of possible coolants including light water, liquid metal, or molten salt. The ones that are not using light water as coolant, are called Advanced Modular Reactors (AMRs). They use nuclear fission to generate heat to produce electricity or that can be used directly for other applications (9). The distinctive feature of SMRs is the modular design. Key parts are manufactured in specialised factories, shipped to the installation site where workers assemble them. The advantages of this approach are:

- Quality control: certified factories with high standards
- Faster assembly: on-site construction connecting pre-built modules
- Scalability: Add more modules as demand grows

SMRs are relying on passive safety systems that reduce the probability of a major incident, and ease public acceptance. Those systems include:

- Gravity driven coolant: if the reactor overheats, gravity pulls cool water into the core
- Smaller cores: less radioactive material, lower risk for worst-case scenario
- Underground designs: with the reactor underground there is less exposure to external hazards

SMR designs are grouped in 4 different technology lines: water-cooled reactors, high temperature gas-cooled reactors, liquid metal cooled fast neutron spectrum reactors, and molten salt reactors. Floating nuclear power plants and Micro reactors, are considered as 2 additional categories, using the previously mentioned technologies (10). Integral Pressurised Water Reactors (iPWR) are evolutionary designs derived from current and previous generations of water reactors, produced through a simplification and miniaturisation of the most widely deployed reactor type. Despite their entirely novel system configuration, iPWRs benefit from a long base of operating experience, well-established engineering knowledge, and a technologically mature foundation. High Temperature Gas-Cooled Reactors (HTGR) replace conventional water coolant with an inert gas, typically helium, operating at significantly higher temperatures. This offers two principal advantages: improved thermodynamic conversion of heat to electricity, and the capability to provide high-temperature process heat for industrial applications such as hydrogen production. HTGRs use a robust fuel design that maintains its integrity under the most demanding accident conditions, giving the technology an inherently safe characteristic. Molten Salt Reactors (MSR) use liquid fuel dissolved in a salt medium rather than the solid fuel used in other reactor types. The liquid configuration provides good thermal and neutronic properties that make MSRs inherently safe, and enables more sustainable use of fuel resources, liquid fuel can be reprocessed and recycled, a process that can be conducted online during reactor operation. Liquid Metal Fast Reactors (LMFR) sustain a chain reaction using high-energy neutrons, with a liquid metal coolant, sodium, lead, or lead-bismuth, that avoids the neutron moderation that occurs in conventional reactors. This fast neutron spectrum enables the transmutation of transuranic elements that are the primary long-lived contributors to nuclear waste, effectively converting waste into additional electrical output.

An ordinary SMR plant is expected to have numerous units per site, which makes it ideal for flexible operations, as it could plan power and outages of its units according to the demand (11). Load following (LF) is another operational practise for a reactor plant. SMRs, due to their smaller size and generating capacity are ideal for LF operations. This ability can support the grid when renewables oscillate (12). The term SMR Cogeneration refers to the production of various types of energy at the same time, optimising resources efficiently in distributed energy systems. Cogeneration systems with SMRs reduce carbon emissions, while enhance energy sustainability. The excessive heat produced by SMRs during electricity generation can be used for various applications, either for district heating, or process heat for heavy industries, boosting efficiency and reducing carbon footprint (13). Load Following by Cogeneration was introduced to support electricity demand, while preventing a penalty for overcapacity. The SMR plant can operate at nominal power, supplying with electricity to the grid during peak hours, and when the demand is low, provide the electricity to an external system, like a hydrogen or desalination plant (14). Cogeneration applications is a major economic advantage for SMRs, because they have the capability to generate revenues from multiple streams, not just electricity sales. By providing district and process heat, supporting desalination plants and hydrogen production, together with power generation, SMRs can capitalise on various revenue streams, reducing the dependency from an unstable electricity market.

In 2025, beyond Rosatom and CNNC that have operational SMRs, a few companies are leading the development race with the support of significant public and private investment. Some of those most relevant to the European SMR ecosystem and closer to deployment are identified and used as reference in this report. These are NuScale Corporation, GE Vernova Hitachi, Terrapower, X-Energy, Rolls-Royce SMR, NuWard, and Holtec International. Detailed profiles of the those SMR vendors and their supply chain development programmes are provided in Appendix B. The analysis in this chapter draws on those profiles to develop the supply chain tier framework and qualification logic that inform the assessment in subsequent chapters.

2.2 Global Market Outlook

2.2.1 The Nuclear Renaissance in Numbers

The global nuclear energy landscape is undergoing a structural transformation that would have seemed implausible a decade ago. The IAEA has revised its annual projections for nuclear power growth upward for four consecutive years. At the end of 2023, 413 nuclear reactors were operational globally with a combined installed capacity of 371.5 GW(e) (15). In the IAEA high case scenario, global nuclear generating capacity is projected to reach 950 GW by 2050, approximately 2.5 times the 2023 level. Under the low case, capacity increases by 40% to 514 GW. SMRs are projected to contribute approximately one quarter of total added capacity in the high case and 6% in the low case. By late 2025, these projections were already being overtaken by events. Nuclear generation reached an all-time high of 2,667 TWh in 2024, with around 440 nuclear power reactors operating globally producing nearly 397 GWe of capacity across 31 countries, and over 70 additional reactors under construction expected to add a further 77 GWe (16). The IEA's scenario analysis reinforces the scale of the opportunity. Across all three IEA scenarios nuclear investment increases from its current level of approximately $65 billion per year. Under the Stated Policies Scenario, capacity rises by more than 50% to nearly 650 GW by 2050. Under the Announced Pledges Scenario, capacity more than doubles by mid-century with annual investment reaching $120 billion in 2030. Under the Net Zero Emissions Scenario, installed capacity exceeds 1,000 GW by 2050 with annual investment surpassing $150 billion by 2030. For SMRs specifically, the APS projects more than 1,000 units deployed by 2050 with a total capacity of 120 GW, requiring cumulative investment of $670 billion (17). The NEA projects the global SMR market could reach 21 GW of installed capacity by 2035, after which a significant acceleration in build rate is expected.

On the basis of a build rate rising to 75 GW per year by 2050, the NEA estimates that up to 375 GW of SMR capacity could be installed over the next three decades (18).

2.2.2 From Climate Pledge to Industrial Strategy

The quantitative projections are underpinned by a level of political commitment to nuclear energy that has no modern precedent. At the COP28 summit in Dubai in December 2023, 22 countries signed the Declaration to Triple Nuclear Energy, pledging to triple global nuclear capacity by 2050 (3). Simultaneously, more than 120 companies headquartered in 25 countries and active in over 140 nations signed the Net Zero Nuclear Industry Pledge, echoing the governments' commitment (19). The momentum has continued to build. By late 2025, the Declaration had grown to 33 signatory countries, with six additional countries joining at COP29 in Baku in November 2024 and two further countries joining at COP30. More than 140 nuclear industry companies had endorsed the industry pledge, and 16 major financial institutions had formally backed the tripling goal since September 2024 (16). In a historic development at COP28, nuclear energy was for the first time formally included in the Global Stocktake, the agreement of all 198 UNFCCC signatory countries, as one of the low-emission technologies whose deployment should be accelerated (20). The significance of this political shift for the SMR market cannot be overstated. Government commitment is the essential precondition for private investment in nuclear energy, given the long lead times, high upfront costs, and regulatory complexity involved. When governments signal sustained political commitment, as they have done in increasing numbers since 2023, they create the conditions under which private capital can follow, supply chains can be built, and deployment can accelerate.

2.2.3 Market Drivers

The demand that is driving this investment and development activity is multidimensional, and understanding its structure is essential to understanding where the supply chain opportunity lies for countries like Greece. Energy security is the primary driver in the post-2022 geopolitical environment. The disruption to European gas supply following Russia's invasion of Ukraine demonstrated with brutal clarity the strategic risk of fossil fuel import dependency for countries without indigenous energy resources. SMRs offer dispatchable, low-carbon baseload power whose fuel supply, uranium, is diversified across multiple geopolitically stable producing countries including Canada, Australia, Kazakhstan, and Namibia (21). Decarbonisation requirements are the structural long-term driver. Achieving the EU's climate neutrality target by 2050 alongside the commitments made under the Paris Agreement requires deploying every available low-carbon technology at scale. SMRs operate continuously for extended periods, typically 18 to 24 months between refueling, providing the predictability and consistency of output that grid stability requires regardless of weather conditions or time of day. Complementing rather than competing with the intermittent renewable energy sources that will continue to dominate new capacity additions (22). Industrial decarbonisation, the hardest-to-abate dimension of the energy transition, is an emerging driver of particular commercial significance. Gas and oil operations, mining, chemical manufacturing, refineries, and steel production all require massive energy inputs that currently depend on fossil fuels. SMRs and microreactors can be deployed in the remote or industrial locations where this demand is concentrated. Nuclear cogeneration, the simultaneous production of electricity and high-temperature heat, offers overall plant efficiency potentially exceeding 80%, compared with approximately 33% for traditional electricity-only reactors (23). The technology sector has emerged as a major new demand centre. Data centres currently account for approximately 70 TWh of electricity consumption in Europe alone, projected to reach 115 TWh by 2030 (24). The commitments of Amazon, Google, Meta, and Microsoft to nuclear power purchase agreements and direct SMR investments represent a structural shift in who the off-takers for first-of-a-kind SMR projects will be, large, creditworthy corporations rather than regulated utilities, which significantly improves project bankability.

2.2.4 Government Support: The Policy Architecture of Deployment

The political commitment registered at COP28 has been translated into concrete government support programmes across the major nuclear markets. In the United States, the DOE established the SMR Licensing Technical Support programme to support accelerated deployment through public-private partnerships, and launched the Advanced SMR R&D programme in FY2019. In its most recent iteration, the DOE re-issued a $900 million funding solicitation structured in two tiers: Tier 1 provides up to $800 million to support up to two first-mover teams committed to deploying a first plant. Tier 2 provides approximately $100 million to address gaps in design, licensing, supply chain, and site preparation for follow-on deployments (25). The most concrete evidence that government-backed supply chain financing has moved from policy aspiration to operational reality came in June 2026, when the US Department of Energy's Office of Energy Dominance Financing issued a conditional commitment for a USD 17.5 billion American Nuclear Supply Chain Loans Program. The programme is explicitly designed to finance the long-lead items required to rebuild America's commercial nuclear supply chain, with the stated objective of accelerating deployment of ten large-scale reactors by up to three years (26). In Canada, the SMR Action Plan brought together key national enablers to plan the development, demonstration, and deployment of SMRs across multiple applications, supported by $120 million from the Federal Government in 2022. More recently, the province of Ontario committed CAD 1 billion through the Building Ontario Fund and the federal government provided CAD 2 billion through the Canada Growth Fund to build Canada's first SMR (27). In the United Kingdom, the government committed a total of £385 million to its Advanced Nuclear Fund to support both advanced and small modular reactors, with the objective of delivering a demonstration plant by the early 2030s (28). In the European Union, the Commission approved €130 million for investments in nuclear innovation through the Euratom Research and Training Work Programme, and separately approved a €300 million French state aid measure to support EDF's Nuward SMR subsidiary (6). The EU SMR Strategy of March 2026, analysed in full in Section 2.3, now provides the overarching framework within which these national instruments operate.

2.2.5 The Supply Chain Bottleneck

The gap between the ambition reflected in these market projections and the current industrial reality is the central challenge, and the central opportunity, that this report addresses. The global nuclear supply chain contracted sharply during the three decades of limited new construction between the 1990s and the 2010s. Qualified suppliers became fewer, specialist manufacturing capabilities were lost or consolidated into a handful of facilities, and an entire generation of nuclear construction expertise retired without adequate knowledge transfer. Almost all current projects rely on public-private partnerships to manage the resulting FOAK risks, with the public sector supporting R&D and helping to de-risk first plants (2). The economic model of SMRs, cost reduction through serial production, factory quality control, and standardised modular assembly, cannot be realised without rebuilding this supply chain. The market projections set out above are not self-fulfilling. They describe the scale of deployment that would occur if the supply chain can be developed to support it. Building that supply chain is the immediate and urgent industrial policy challenge, and it is the challenge that this report argues Greece is positioned to contribute to.

2.3 The EU SMR Strategy (March 2026)

> **Key Reference:** *European Commission SMR Strategy COM/2026/117, published 10 March 2026, the foundational EU policy document for this report* (29)..

On 10 March 2026, the European Commission published its Communication on a Strategy for the Development and Deployment of Small Modular Reactors in Europe, COM(2026) 117. Addressed to the European Parliament, the Council, the European Economic and Social

Committee, and the Committee of the Regions, this document represents the most significant piece of EU nuclear industrial policy in a generation. It is also, for the purposes of this report, the primary policy mandate that defines Greece's strategic imperative. Every analytical conclusion and recommendation that follows is grounded in what this Strategy says and what it requires.

2.3.1 The Strategic Context

The Strategy opens from a position of competitive urgency. The European Commission frames the SMR question not as a matter of energy policy alone but as an industrial competitiveness challenge with geopolitical dimensions. The document notes that SMRs "have the potential to mobilise entire value chains across several EU countries and in different business areas, including engineering, advanced materials and robotics, and to unlock private investment" and that they "can bolster EU research and innovation leadership, create new technological knowledge and skilled jobs as well as long-term export capacity" [COM(2026) 117, p.1].

The scale of ambition is quantified through reference to the Nuclear Illustrative Programme published simultaneously as COM(2026) 120. Industry estimates and projections contained in that document place preliminary evaluations of expected SMR capacity in the EU by 2050 at between 17 GW and 53 GW for electricity generation and other purposes including heat, hydrogen, and synthetic fuels [COM(2026) 117, p.1, fn.1].

The applications envisaged extend well beyond electricity production. The Strategy identifies SMRs as a technology capable of supporting the decarbonisation of hard-to-abate sectors "at the heart of EU's industrial base including chemicals, steel, refineries, maritime transport, defence, and district heating, while alleviating the pressure on electricity grids from growing demand, including from data centers, low-carbon hydrogen and synthetic-fuels production, and water desalination." [COM(2026) 117, p.2] The explicit inclusion of maritime transport is of particular strategic relevance to Greece as the world's foremost ship-owning nation, and will be examined further in Section 3.

2.3.2 The Supply Chain Imperative

The Strategy's most consequential passage for this report is its treatment of the European supply chain. The document is unambiguous: "A competitive European supply chain should be promoted for securing a high degree of local content and European added value in all SMR projects" [COM(2026) 117, p.5]. This is a defined strategic objective, articulated as Action 2 of the Strategy's nine-action framework, and directly linked to the Commission's Industrial Accelerator Act proposal. The Strategy draws an explicit parallel between SMR manufacturing and the industrial models of shipbuilding and aerospace: "Developing modular manufacturing for SMRs in Europe is essential and should be inspired by other industrial domains such as shipbuilding or passenger aircraft manufacturing" [COM(2026) 117, p.6]. This analogy reflects a considered assessment of where the SMR economic model requires industrial competence, not in bespoke, site-built nuclear construction, but in precision fabrication, modular assembly, quality-controlled factory production, and component logistics. These are capabilities that Greece's maritime and shipbuilding sector already possesses at scale, as documented in Section 3 of this report. The Strategy further specifies that the supply chain must develop sufficient capacity for a fleet approach: "constructing a fleet of SMRs with a consistent design across multiple countries will require industrial standardisation and regulatory cooperation in licensing. Both are essential to reduce construction times and costs through improved production methods and optimised processes across Member States" [COM(2026) 117, p.6]. The fleet model is what makes supply chain investment economically rational, as it transforms a bespoke manufacturing commitment into a repeatable, volume-driven industrial activity.

2.3.3 The Nine Actions and Their Relevance to Greece

The Strategy is structured around nine specific actions assigned to Member States, the European Industrial Alliance on SMRs, and the Commission. Four of these have direct implications for Greece's positioning.

Action 2 directs Member States, with the support of the Alliance, to work on strengthening the European supply chain for SMR development "by identifying gaps and promoting collaboration between suppliers as well as with SMR developers, in alignment with the local content requirements of the Commission's Industrial Accelerator Act proposal" [COM(2026) 117, p.7]. For Greece, this action defines the analytical purpose of this report: the industrial capability assessment and GIS mapping in Sections 3 and 5 are precisely the kind of supply chain gap identification that Action 2 calls for at national level.

Action 6 encourages Member States and regions to designate certain areas as Net-Zero Acceleration "SMR Valleys", defined as "geographical zones focused on activities related to the manufacturing or assembly of SMRs" [COM(2026) 117, p.8]. The Strategy specifies that SMR Valleys "could help streamline permitting procedures, improve access to financing and foster innovation and business collaboration among local suppliers" and may enable the designation of supportive measures including tax incentives. The Piraeus-Elefsina industrial corridor, analysed in detail in Section 5, presents the strongest prima facie case for a Greek SMR Valley designation, combining port infrastructure, shipbuilding and fabrication capability, energy grid access, and proximity to the largest concentration of relevant industrial expertise in the country.

Action 8 calls on interested Member States to establish an "SMR coalition" to facilitate the introduction of the Alliance's selected SMR designs "through in-depth policy and regulatory cooperation" [COM(2026) 117, p.12]. Greece's absence from any such coalition as of the date of this report's publication represents perhaps the most immediately addressable gap in its nuclear industrial posture. The accession decision is a political one requiring no prior technical or industrial development, it signals intent and opens access to the coordination mechanisms that will shape deployment architecture across the EU.

Action 9 addresses international cooperation, committing the Commission to "continue to cooperate with partner countries planning to deploy SMRs in the near term, including candidate and potential candidate countries and partner countries in our Southern neighbourhood" [COM(2026) 117, p.13]. This framing is directly relevant to Greece's potential role as a regional hub for Southeast Europe and the Eastern Mediterranean, geographies that the Strategy explicitly acknowledges as part of the EU's cooperative ambition.

2.3.4 The Industrial Ecosystem Conditions

The Strategy identifies five conditions that must be met to create a sound industrial ecosystem for SMR deployment. Delivering first-of-a-kind installations by the early 2030s; advancing AMR development in parallel; nurturing "a European industrial supply chain able to provide a broad spectrum of components for different design options"; creating conditions for a fleet approach enabling series production; and streamlining regulatory processes to enable timely licensing [COM(2026) 117, p.4].

The third condition, supply chain development, is the one most directly addressed by this report. It is also the one that carries the most immediate commercial relevance for Greek industrial actors, because it does not require Greece to have made any deployment decision. A Greek company that qualifies to supply components for an SMR project in Romania, Poland, or the United Kingdom is contributing to the European supply chain irrespective of what Greece decides about its own energy system.

2.3.5 The Financing Architecture

The Strategy outlines a financing architecture of direct relevance to Greek institutional actors and potential project developers. Key instruments identified include the InvestEU programme, for which the Commission proposes an additional temporary top-up of €200 million until 2028 to support the deployment of initial commercial units of innovative nuclear technologies [COM(2026) 117, p.9]. The Innovation Fund, which has mechanisms to support first-of-a-kind SMR deployment through calls for proposals. The IPCEI on innovative nuclear technologies, which can pool resources behind common projects related to research, development, and first industrial deployment [COM(2026) 117, p.8]; and the Net-Zero Industry Act's regulatory sandbox mechanism, which allows companies to "test, qualify, and validate new approaches and innovative components under the supervision of a competent regulatory authority" [COM(2026) 117, p.12].

For a Greek established company entering the nuclear supply chain, the regulatory sandbox mechanism is particularly significant: it provides a structured pathway for developing and testing nuclear-relevant activities without requiring the full domestic licensing framework that Greece does not yet have in place.

The Strategy also explicitly addresses start-ups and scale-ups, noting that the EU Startup and Scaleup Strategy "aims at facilitating access to finance, public procurements, markets, services, and talents for innovative start-ups and scale-ups, including in the area of nuclear technologies" [COM(2026) 117, p.9]. This language is a direct institutional invitation to the kind of organisations that are beginning to emerge in the Greek nuclear space.

2.3.6 What the Strategy Does Not Do, and Why That Matters

The EU SMR Strategy is an enabling framework, not a deployment mandate. It does not require Member States to build SMRs. It does not allocate project funding directly. It does not resolve the technical, regulatory, and commercial challenges that still face first-of-a-kind projects. What it does is establish the institutional architecture, the Alliance, the coalition, the SMR Valleys, the financing instruments, within which deployment decisions will be made and supply chain positions will be taken.

The significance of this for Greece is precise: the window for positioning is open now, while the architecture is being built. A country that is inside the coalition, participating in the Alliance's working groups, and actively mapping its supply chain contribution when deployment decisions are made will be in a fundamentally different position from one that engages only after those decisions have crystallised. The Strategy itself acknowledges this urgency, concluding that "the EU needs to take urgent action to stay at the forefront" and that "the success of this endeavor hinges on the development of strong supply chains" [COM(2026) 117, p.13]. Greece's response to that call is what the remainder of this report seeks to map.

2.4 The SMR Supply Chain: Structure and Opportunities

The economic case for SMRs rests on the fundamental restructuring of how nuclear infrastructure is built. The transition from bespoke, site-constructed nuclear plants to standardised, factory-manufactured modular systems is the economic logic that makes SMR cost targets achievable. Understanding how that supply chain is organised, what it requires at each tier, and where new entrants can realistically participate is therefore essential context for any assessment of a country's SMR opportunity. This section maps the structure of the SMR supply chain, identifies the key vendor development programmes through which national industries are being recruited, and examines the opportunities and entry conditions that characterise each tier.

2.4.1 From Bespoke Construction to Serial Manufacturing

The defining characteristic of the nuclear supply chain for large conventional reactors has been its project-by-project, site-specific nature. Each plant was essentially custom-engineered for its location, with components fabricated by a small number of highly specialised manufacturers and assembled by a workforce experienced in unique, non-repeating configurations. The result was a supply chain that was structurally incapable of delivering the economies of scale that other capital-intensive industries take for granted, and whose contractors accumulated limited transferable learning between builds (30). SMRs are designed to break this pattern. The modular approach means that the reactor and its principal components are manufactured in certified factory environments, shipped as complete assemblies, and connected on site. The analogy most frequently used in the industry is shipbuilding or aircraft manufacturing, industries in which complex, safety-critical products are produced at scale through standardised processes with rigorously controlled quality systems (31). The critical condition for realising this model is the development of a global supply chain whose participants are qualified to nuclear-grade standards and capable of serial production of identical components across successive builds. This transition has not yet been demonstrated at commercial scale in the nuclear sector. The global nuclear supply chain contracted sharply during the three decades of limited Western construction activity between the early 1990s and the 2010s, when qualified manufacturers reduced in number, specialist capabilities were lost or consolidated, and investment in nuclear-grade production capacity declined. The bottlenecks that have resulted, concentrated in heavy forgings, nuclear-grade pumps and valves, certified instrumentation and control systems, are well documented and represent a constraint on deployment timelines that is as binding as any regulatory or financing barrier (2). The NEA and the World Economic Forum have both identified supply chain readiness as one of the six enabling conditions that must advance simultaneously for SMR serial production to become viable (18), (32). For new entrant countries, this structural moment presents a genuine opportunity. The supply chain is being rebuilt from a constrained base, and vendors are actively seeking to expand the pool of qualified manufacturers. The question is whether they can qualify in time to participate in the first and second waves of deployment, and whether their governments and industries are moving with sufficient intent to make that happen.

2.4.2 The Five-Tier Supply Chain Architecture

The SMR supply chain is most usefully understood through a five-tier architecture, each tier defined by its proximity to nuclear safety systems, its qualification requirements, and the degree to which it is accessible to new market entrants. This framework draws on the supply chain development programmes of leading vendors and the NEA's supply chain readiness analysis (33).

Tier	Scope	Key Components / Activities	Qualification Threshold	Greece Access (Near-Term)
Tier 1	Nuclear island core	Reactor pressure vessel, steam generators, pressuriser, core support structures, primary coolant pumps	ASME N-Stamp / RCC-M; nuclear-grade QA programme	Limited, requires multi-year qualification investment
Tier 2	Structural and mechanical balance of nuclear island	Containment structures, secondary circuit heat exchangers, piping systems, nuclear-grade valves and pumps, structural steel modules	ISO 19443; ASME Section III sub-categories; nuclear-specific QA	Moderate, accessible within 3–5 years for certified fabricators

Tier	Scope	Key Components / Activities	Qualification Threshold	Greece Access (Near-Term)
Tier 3	Electrical, instrumentation and control (I&C), and digital systems	Control systems, digital I&C platforms, cabling, power supply systems, radiation monitoring equipment	Vendor-specific qualification; ISO 19443; nuclear-grade I&C standards	Limited, specialist sub-sector with narrow incumbent supplier pool
Tier 4	Balance of plant and civil works	Turbine hall, cooling systems, electrical switchgear, foundations, civil structures, site preparation, grid connection infrastructure	ISO 9001 / ISO 19443 for nuclear-adjacent elements; standard engineering certifications for civil works	High, directly accessible for qualified Greek EPC contractors
Tier 5	Services, logistics, inspection, and O&M support	Non-destructive testing and inspection, transport and logistics, port handling, module staging, component surface treatment, professional services (legal, environmental, project management)	ISO 19443 for NDT; sector-specific certifications; port and transport safety standards	Very High, multiple Greek sectors directly relevant and near-ready

Table 1: SMR Supply Chain Tier Structure and Greece Access Assessment

The practical implication of this structure is that the qualification threshold rises steeply as one moves from Tier 5 toward Tier 1, but so does the potential value of participation. Tier 1 components, reactor pressure vessels, steam generators, primary coolant pumps, are manufactured by a small number of facilities globally, among them Japan Steel Works, Doosan Enerbility in South Korea, and Le Creusot in France, with new capacity under development in the Czech Republic and the United Kingdom (34). These are not markets that new entrants will penetrate in the near term. Tiers 4 and 5, however, represent a large proportion of total project value, civil works, balance of plant, non-destructive testing, logistics, module staging, and professional services, and are directly accessible to countries with relevant industrial capabilities and no prior nuclear history. The strategic entry point for a country in Greece's position is therefore not to attempt to compete with established Tier 1 and Tier 2 manufacturers, but to secure a credible position in Tiers 4 and 5 immediately while pursuing a deliberate qualification pathway toward Tier 2 participation in the medium term. This sequencing is the same trajectory followed by every successful nuclear supply chain entrant, as the case studies in Section 2.5 confirm.

2.4.3 Nuclear-Grade Qualification: ISO 19443 and the N-Stamp Framework

Entry into any tier of the nuclear supply chain is conditional on demonstrating that a company's quality management systems meet the standards required for nuclear safety. Two certification frameworks are most relevant to European and transatlantic supply chain participants.

The ASME N-Stamp is the American Society of Mechanical Engineers' nuclear accreditation system, covering vessels, pumps, valves, piping, heat exchangers, core support structures, containment systems, and transport packaging. It is recognised internationally as the quality benchmark for nuclear-grade component supply and is required by US-design SMR vendors including NuScale, GE Vernova Hitachi, and Holtec International (35). The real barrier to N-Stamp certification is not the process itself but the multi-year commitment required to establish and maintain the quality assurance programme that underpins it, including full compliance with ASME NQA-1 standards, certified personnel, and nuclear-grade facility standards. For a company with no prior nuclear experience, this represents a commitment of several years of organisational investment before a single nuclear-grade component can be supplied.

In Europe, ISO 19443 provides the nuclear-specific quality management system standard, adding approximately 200 requirements to the ISO 9001 baseline to meet the expectations of licensed nuclear operators (36). It covers products and services important to nuclear safety, applies to organisations of any size, and aligns with IAEA safety requirements. ISO 19443 is increasingly the certification pathway for European SMR supply chain participants and has the practical advantage of being directly accessible to companies that already hold ISO 9001 certification, a widely held standard across Greek manufacturing, engineering, and services sectors.

Key qualification pathway: Greek companies with existing ISO 9001 certification face a structured but achievable progression toward ISO 19443 nuclear-grade qualification. The qualification timeline for a motivated company with a robust quality management system and a defined product scope is estimated at 18 to 36 months. Section 6.3 of this report sets out the specific steps in that pathway.

The fragmentation risk in certification standards is worth acknowledging. Advanced SMR designs using molten salt, liquid metal, or gas coolants may require components not covered by the original ASME code framework, and vendor-specific qualification processes may diverge from universal standards as the industry develops. However, for the near-term generation of SMR designs most relevant to European deployment, the iPWR-based designs of NuScale, Rolls-Royce, NuWard, and Holtec, the N-Stamp and ISO 19443 frameworks remain the definitive entry requirements.

2.4.4 The EU SMR Strategy and the Supply Chain Mandate

The European Commission's SMR Strategy published on 10 March 2026 adds a critical policy dimension to the supply chain opportunity. The Strategy's explicit objective of ensuring European industrial added value in all SMR projects deployed within the EU transforms vendor supply chain development from a commercial preference into a policy requirement. Its projection of 17 to 53 GW of SMR capacity by 2050 and its identification of €241 billion in associated investment requirements establish the demand signal that supply chain investment needs to be commercially justified (37). The Strategy introduces several instruments with direct supply chain relevance. The concept of SMR Valleys designated industrial clusters combining manufacturing, assembly, testing, and service capabilities, creates an explicit framework for geographic concentration of supply chain activity. The fleet-based deployment approach, under which a committed orderbook of multiple units of a standard design supports manufacturing investment, mirrors the economics of serial production described in the WEF's collaborative framework (32). The Net-Zero Industry Act's classification of SMRs as net-zero technologies and its provision for regulatory sandboxes further reduce the administrative barriers facing new supply chain entrants (38). For countries that are EU members but have not yet established nuclear industrial capabilities, the SMR Strategy is an institutional invitation. The European Industrial Alliance on SMRs, the SMR Coalition mechanism proposed in the Strategy, and the Euratom Research and Training Work Programme 2026–2027 collectively provide the frameworks through which national governments and their industries can access EU support for supply chain development. Section 6.1 of this report examines Greece's specific response mandate in detail.

2.4.5 The Manufacturing Transition and Its Implications for New Entrants

The transition from bespoke nuclear construction to serial modular manufacturing creates conditions that are simultaneously challenging and enabling for new entrants. The challenge is the qualification burden: any company seeking to supply nuclear-grade components must invest in quality management systems, personnel training, and facility upgrades that take years to establish and require sustained organisational commitment. The enabling condition is that this transition is occurring now, the supply chain is being rebuilt, vendor programmes are actively recruiting new participants, and the EU policy framework is explicitly incentivising European industrial participation. Countries that begin their qualification journey in 2026 and 2027 are positioning themselves for the 2030–2035 early deployment wave. Countries that begin in 2030 will find the supply architecture already established and the entry windows narrowed. Six conditions must advance simultaneously for the serial manufacturing model to become viable, as the NEA has identified: delivery innovation, regulatory evolution toward product-based certification, economic viability through market frameworks that value dispatchable zero-carbon power, site availability through pre-qualified deployment programmes, capital access as SMR risk profiles improve, and developer ecosystem maturity through integrated supply chains (33). For new entrant national industries, the practical implication is that participation in vendor supply chain programmes should begin while these conditions are still being assembled, not after they are resolved. The supply chain architecture of the first commercial SMR fleet will be largely determined by the partnerships formed between 2026 and 2030. The window for new entrant qualification is open, but it is not permanent.

2.5 Precedents: How Countries Entered the Nuclear Supply Chain

The pathway from nuclear outsider to credible supply chain participant is neither linear nor uniform. Each country that has successfully entered the nuclear supply chain has done so through a distinct combination of starting conditions, strategic choices, institutional investments, and timing. The four case studies that follow have been selected as analytically relevant precedents for Greece's own situation: a non-nuclear EU member state with a strong industrial heritage, a maritime and engineering tradition, and a regional geography that places it at the intersection of multiple emerging deployment markets. The UAE demonstrates what disciplined institutional construction from zero can achieve. Poland reveals the specific challenges facing an EU industrial economy without nuclear heritage as it confronts its first major programme. Türkiye shows what a country at a comparable starting point to Greece, but with a decade's head start, has built. Romania provides the closest regional analogue: the most advanced SMR project in the EU, directly in Greece's neighbourhood, and explicitly positioning itself as the Southeast European nuclear hub. Each case study is examined across four dimensions: the country's starting conditions and strategic rationale; the institutional and policy framework it constructed; its approach to supply chain entry and local content; and the transferable lessons it offers. A comparative synthesis at the close of the section draws out the patterns most relevant to Greece's position.

2.5.1 The United Arab Emirates: Building from Zero with Institutional Discipline

<u>Starting conditions and strategic rationale</u>

When the UAE published its policy on the peaceful use of nuclear energy in 2008 and subsequently awarded the Barakah contract to a KEPCO-led Korean consortium in December 2009, it had no nuclear regulatory body, no nuclear workforce, no domestic supply chain, and no operational experience of any kind with nuclear technology. What it had was strategic clarity, substantial sovereign capital, and the institutional discipline to construct an entire nuclear ecosystem from the foundations upward within a defined timeline (39). The strategic rationale was straightforward: the UAE was consuming rapidly growing quantities of natural gas for power generation, gas that had alternative higher-value uses as an export commodity. Nuclear baseload would free that gas for export while positioning the UAE as a regional leader in clean energy, a framing that has since become foundational to its COP28 presidency and its Net Zero 2050 strategy.

Institutional and policy framework

The Emirates Nuclear Energy Corporation (ENEC) was established as the owning and developing entity, with a mandate to develop, own and operate nuclear plants under direct IAEA supervision, and with adherence to what the UAE described as the highest standards of safety, transparency, and security. The Federal Authority for Nuclear Regulation (FANR) was built in parallel as the independent safety regulator, staffed initially with international expertise while UAE nationals were trained to progressively take over its functions. The sequencing, regulator established before construction began, operator trained before the plant was commissioned, reflects a discipline that many established nuclear programmes have not consistently demonstrated (40). The contract with KEPCO included extensive knowledge transfer provisions, legally binding requirements for Korean experts to train UAE counterparts in every aspect of nuclear plant construction, commissioning and operation. A full-scope simulator replicating the Barakah control room was built and used to certify UAE operators before the plant entered service. The joint venture Nawah Energy Company, owned by ENEC and KHNP, was established as the plant operator, with a long-term commitment to progressively increasing the proportion of UAE nationals in its workforce.

Supply chain entry and local content

The Barakah supply chain model was not initially oriented toward domestic content. The KEPCO consortium, comprising KHNP, Hyundai, Samsung, Doosan, KEPCO E&C, Korea Nuclear Fuel Company, and Korea Plant Service and Engineering, provided the overwhelming majority of construction and engineering capability, with Westinghouse providing technical assistance and licence-related services. The $20 billion contract was, in its first phase, essentially a turnkey delivery from a sovereign industrial partner (41). What the UAE developed in parallel was service and professional capability: project management, regulatory oversight, quality assurance, safety analysis, and operational competence. These are not the supply chain segments that determine whether a programme succeeds and, crucially, they are the ones that qualify a country for genuine partnership on subsequent projects. The UAE's 123 Agreement with the United States, concluded as part of its nuclear programme initiation, also established the legal framework for cooperation with US-technology vendors, a prerequisite for SMR engagement that several other potential host countries have yet to complete. The financing structure demonstrated the enabling role of sovereign capital. The $19.6 billion project loan was predominantly sourced from the Abu Dhabi Department of Finance ($16.2 billion), complemented by a $2.5 billion Export-Import Bank of Korea facility and a green loan refinancing that made Barakah the first nuclear plant in the region to access green finance instruments (39). The UAE did not require multilateral development bank support or external guarantees because its sovereign balance sheet could absorb the financing role. This is a structural advantage unavailable to most countries entering the nuclear sector, including Greece.

Transferable lessons

Three lessons from Barakah are directly relevant to any country entering the nuclear supply chain. First, institutional construction must precede industrial construction: the regulatory body, the owning entity, and the workforce development programme must be operational before the first concrete is poured, not assembled in parallel with it. Second, knowledge transfer must be legally binding and specifically structured, not a vague aspiration embedded in partnership rhetoric. Third, the initial supply chain entry point for a non-nuclear country is professional and operational service capability, not component manufacturing, and building that capability credibly is the prerequisite for deeper participation in subsequent projects. The fact that the UAE and South Korea are now jointly marketing the Barakah model to third countries confirms that a country that starts as a supply chain recipient can, within a decade, become a supply chain partner (42).

2.5.2 Poland: Industrial Readiness Confronts the Qualification Gap

Starting conditions and strategic rationale

Poland presents the closest structural parallel to Greece among established EU economies. It is an EU member state with no operational nuclear power plants, a large and experienced industrial base, a deep dependence on coal for electricity generation, and a political consensus around nuclear energy that has hardened into formal government commitment. In November 2022, Poland selected Westinghouse AP1000 technology for its first nuclear power plant at the Lubiatowo-Kopalino site in Pomerania, with the first unit targeted for commercial operation in 2033 (43). The strategic rationale was driven by energy security and decarbonisation in equal measure. Poland's coal dependence made it one of the EU's most carbon-intensive power systems, and its vulnerability to gas supply disruption, sharply exposed by Russia's invasion of Ukraine, created the political conditions for a decisive shift toward nuclear. The Energy Policy of Poland until 2040 sets a target of 6 to 9 GWe of installed nuclear capacity, with SMRs planned alongside the large Westinghouse programme for both electricity generation and industrial heat (44).

Institutional and policy framework

Polskie Elektrownie Jądrowe (PEJ), a special-purpose vehicle wholly owned by the Polish State Treasury, was established as the delivery entity for the first nuclear programme. An agreement setting out the plan for delivery was signed in May 2024 by Westinghouse, Bechtel, and PEJ, following the government's decision-in-principle for PEJ to construct a three-unit plant. Total investment costs are estimated at approximately PLN 192 billion, equivalent to around $49 billion at current rates (43). A Baker McKenzie assessment using the Nuclear Energy Readiness Index, published in early 2025, found Poland approximately 58% ready to begin construction. The country scored highest on political readiness (9/10), regulatory readiness, and social readiness (8/10 each). Its lowest score was in technology (3/10), with investment and systemic readiness, covering finance, human resources, accompanying infrastructure, and public administration preparation, also rated at 4/10 each. The assessment is notable for identifying precisely where weaknesses lie: the political and regulatory architecture is in place; the industrial and technical qualification is not.

Supply chain entry and local content

The Polish government has set a target of at least 40% domestic content in the first nuclear power plant, a figure that is both a procurement policy and an industrial development commitment. The starting point for that ambition is more substantive than many assume. According to IGEOS Nuclear, Polish companies have collectively supplied components and services to 44 nuclear power plant projects, two nuclear laboratories, and two nuclear facilities in 26 countries. A Polish Economic Institute survey found that more than a third of surveyed companies declared experience from nuclear projects abroad, and three-quarters had experience in the wider energy sector (43). However, the Baker McKenzie report identified a fundamental problem: Polish companies know they have relevant capabilities, but they do not know precisely what nuclear-grade qualification requires of them in the context of a domestic programme. As Monika Silva of IGEOS Nuclear described it, the supply chain is divided into two distinct groups: those already export-qualified through international nuclear projects, and a larger group that did not believe the Polish programme would materialise and consequently did not pursue qualification. The latter group is capable but unprepared, and the primary barrier they face is information: they lack clarity on exactly what standards, certifications, and processes are required for each product category. The NuScale partnership for SMR deployment adds a second layer of supply chain opportunity. Under the SPRING initiative, the US SMR Pan-Regional Interest Nuclear Group, Poland is one of several Central and Eastern European countries being supported with regulatory and project management capabilities for US SMR technology deployment. KGHM Polska Miedź's partnership with NuScale, targeting operational status as early as 2029, is the most advanced SMR procurement commitment in the region and has created a concrete demand signal around which Polish supply chain development can orient.

Transferable lessons

Poland's experience demonstrates that a strong industrial base is a necessary but insufficient condition for nuclear supply chain participation. The qualification gap, the distance between general industrial competence and nuclear-grade certification, must be crossed deliberately and with specific guidance, and it cannot be crossed at the last minute. The Polish case also illustrates the importance of a credible demand signal: companies that did not believe the programme was real did not invest in qualification, and those companies are now behind. For Greece, the implication is clear: the time to begin qualification is not when the first contract is issued, but several years before.

2.5.3 Türkiye: From BOO Dependency to Industrial Sovereignty

Starting conditions and strategic rationale

Türkiye's nuclear journey began in earnest with the Akkuyu Nuclear Power Plant, for which a government-to-government agreement with Russia was signed in 2010 and construction subsequently commenced. The project was structured as a Build-Own-Operate (BOO) model entirely controlled by Rosatom, giving Türkiye the benefit of nuclear generation without requiring it to build the industrial or institutional infrastructure normally associated with a nuclear programme. This arrangement delivered generating capacity but also created a structural dependency that Türkiye's subsequent policy has been explicitly designed to transcend (45). The strategic rationale for Türkiye's nuclear ambition is rooted in energy security and industrial development simultaneously. Türkiye is targeting 20 GW of nuclear capacity by 2050, including 5 GW from SMRs, as part of its Net Zero Emissions goal by 2053. This is an industrial transformation strategy, with nuclear positioned as the driver of domestic engineering capability, technology sovereignty, and export market development.

The scale of what the Akkuyu project has generated in domestic industrial terms is more significant than its capacity contribution alone suggests. Over $11 billion has been injected into the Turkish economy through the project, and the supply chain that grew around its construction now encompasses more than 400 qualified Turkish companies with demonstrated capacity in nuclear-grade manufacturing, civil construction, and engineering services (46). This is not incidental to Türkiye's nuclear strategy, it is the strategy. The BOO structure that placed construction and operational risk with Rosatom was a deliberate entry mechanism designed to generate industrial learning at manageable sovereign risk, converting a vendor-led project into a national industrial development programme.

Institutional and policy framework

The creation of Türkiye Nükleer Enerji AŞ (TÜNAŞ) in 2022 as a state-owned entity mandated to act as the founding and operating entity for future nuclear projects marks the decisive institutional shift. Where Akkuyu was effectively a Russian asset on Turkish soil, future projects are designed around Turkish state ownership and international vendor partnership, a fundamental reorientation of the governance model. Two large-scale projects define the current pipeline: the Sinop facility (4.8 GW, with negotiations ongoing) and the Thrace facility (5.6 GW, expected to involve China's State Power Investment Corporation). The multi-vendor model is explicit government policy, designed to ensure cost competition, quality assurance, and timely delivery (45). Türkiye's nuclear regulatory framework, the Nuclear Regulatory Authority (NDK), has been developing in parallel, though the pace of regulatory institution-building has generally lagged the ambition of the deployment programme. Ongoing discussions with Rolls-Royce and Westinghouse for SMR deployment, alongside the readiness of the US Export-Import Bank to finance SMR projects in Türkiye, indicate the degree to which Western vendors are treating Türkiye as a credible near-term market.

Supply chain entry and local content

Akkuyu achieved a 56% local content rate, a figure that reflects the maturity of Turkish industrial capability across civil works, structural engineering, mechanical systems, and service provision, even under a foreign-dominated BOO model. The Sinop and Thrace projects represent something structurally different from a simple capacity expansion. Both are being structured under competitive procurement frameworks, engaging KEPCO, EDF, CNNC, and others, rather than the single-vendor BOO model that defined Akkuyu. Crucially, the terms of each vendor negotiation include technology transfer provisions, localisation requirements, and domestic manufacturing commitments that go significantly beyond what Akkuyu's structure demanded (46). Türkiye is using the procurement process for its second and third plants as a deliberate mechanism for deepening the industrial capability that Akkuyu began to build, not simply buying more reactors, but using procurement terms to internalise additional supply chain segments with each successive project cycle. Turkish companies supplied nuclear-adjacent components, civil structures, secondary circuit equipment, and a wide range of services, building in the process a reference base of nuclear project experience that did not exist before construction began. The government has supplemented this organic supply chain development with targeted institutional investment. The "Nuclear Technopark", designed to foster indigenous nuclear capabilities including a domestic SMR design programme, represents a commitment to technological sovereignty that goes beyond supply chain participation toward independent design capability. The SMR design programme, though at an early stage, signals that Türkiye intends to be a nuclear technology exporter, not merely a technology importer, within a generation (45). For foreign firms seeking to enter the Türkiye market, local content requirements are both an obligation and a structuring framework. The requirement to meet localization thresholds through joint ventures, technology transfer, and strategic alliances with Turkish partners creates a formal mechanism for supply chain integration that companies from neighbouring countries, including Greece, could potentially access as part of their own market entry strategy.

Transferable lessons

Türkiye illustrates that local content policy, consistently applied and credibly enforced, can accelerate supply chain development even under a foreign-dominated construction model. The 56% domestic content figure on Akkuyu required Turkish companies to qualify to nuclear-grade standards, deliver on schedule within a highly demanding international project, and build the references that now qualify them for subsequent programmes. Türkiye also demonstrates the importance of transitioning from dependency to ownership as a deliberate policy goal: the creation of TÜNAŞ is a structural redefinition of who holds the nuclear programme. For Greece, Türkiye's trajectory is simultaneously instructive and competitive: a neighbouring country that began from a broadly comparable industrial base and is now a decade ahead in nuclear industrial development.

The most recent phase of Türkiye's strategy makes its direction of travel explicit. The nuclear technopark announced by President Erdoğan in March 2025, combined with a domestic SMR development call issued to Turkish industry, signals intent to move beyond the role of a sophisticated programme operator toward that of a nuclear technology developer and, eventually, exporter (46). The precedent most frequently cited for this trajectory is INVAP of Argentina, a country that began as a nuclear programme participant and built, through sustained institutional investment, an internationally competitive nuclear technology export capability. Whether Türkiye achieves an equivalent outcome remains to be demonstrated. What is not in question is the strategic intent, the institutional infrastructure being assembled to pursue it, and the commercial consequences that intent carries for other countries in the same regional supply chain landscape.

2.5.4 Romania: The Southeast European SMR Catalyst

Starting conditions and strategic rationale

Romania occupies a distinctive position among European nuclear newcomers because it is not, in the strict sense, a newcomer at all. Nuclearelectrica has operated the CANDU-6 reactors at Cernavodă for more than 26 years. Romanian companies have more than 50 years of nuclear industry supply chain experience, with the majority being members of ROMATOM, the Romanian nuclear industry association. The country has a respected and rigorous nuclear regulator in CNCAN, an existing uranium mining sector, and a domestic nuclear fuel fabrication capability (47).

What Romania did not have, until recently, was a credible pathway into the SMR market specifically, a technology generation that requires different manufacturing approaches, different fuel infrastructure, and different regulatory frameworks than the CANDU technology that defines its existing nuclear experience. The decision to pursue NuScale's VOYGR-6 technology for the Doicești project addresses precisely this gap, positioning Romania as the first country in Europe to deploy a third-generation SMR and, explicitly, as the regional catalyst for SMR deployment across Southeast Europe (48).

Institutional and policy framework

The Romania-US partnership on SMRs began with a Memorandum of Understanding between Nuclearelectrica and NuScale in March 2019, a deliberate, government-backed decision to engage with the most commercially advanced Western SMR developer at an early stage. This was followed by a teaming agreement in 2021, a second MoU for engineering and licensing studies in 2022, and the completion of two phases of Front-End Engineering and Design (FEED) work led by Fluor Corporation with Samsung C&T as a key partner (49). The Final Investment Decision for the Doicești project was approved by Nuclearelectrica shareholders in February 2026, marking the transition from analysis to implementation. The project, six NuScale VOYGR-6 modules at 77 MWe each, delivering 462 MWe at the site of a former 600 MW coal-fired power plant, is estimated to create approximately 200 permanent jobs, 1,500 construction jobs, and 2,300 manufacturing and component assembly jobs over the 60-year operational life of the facility. Romania's Energy Minister Bogdan Ivan described the FID as consolidating Romania's position at the forefront of the new European nuclear industry.

Supply chain entry and local content

Romania's supply chain strategy is built on two distinct foundations: the existing nuclear industrial heritage from Cernavodă, and the deliberate cultivation of new SMR-specific capability through international partnerships. The involvement of Fluor Corporation as lead EPC contractor, Samsung C&T as a key engineering partner in the FEED phases, and Studsvik Scandpower for nuclear fuel analysis software illustrates the model. Anchor international expertise in the technology areas where Romania lacks SMR-specific experience, while leveraging domestic capability in civil, mechanical, and operational areas where the Cernavodă heritage is directly relevant (50). The project is expected to deliver a pre-EPC phase lasting approximately 15 months, during which RoPower Nuclear will finalise the contractual structure, negotiate contracts for long-lead items, and define supply chains for materials and equipment (49). The US Export-Import Bank has approved a $98 million commitment to support pre-project services, and the project has been backed by successive US administrations as a flagship demonstration of American SMR technology in Europe (48). Romania's inclusion in the SPRING initiative and its bilateral cooperation with the United States under a 123 Agreement further strengthens its positioning as the preferred European gateway for US-design SMR deployment. The coal-to-nuclear transition dimension of Doicești is directly relevant to Greece's Western Macedonia context. The project explicitly repurposes the infrastructure of a retiring coal plant, grid connection, site access, workforce, for SMR deployment, demonstrating the viability of the just transition narrative in practice rather than in policy documents alone.

Transferable lessons
Romania's experience offers three specific lessons for Greece. First, nuclear heritage matters even when it is not SMR-specific: Romania's Cernavodă experience gave it regulatory credibility, a qualified workforce, and a supply chain reference base that materially accelerated the NuScale engagement process. Greece has no equivalent heritage, which means it must invest proportionally more in institutional construction to achieve a comparable starting position. Second, early vendor engagement, the 2019 MoU predating any formal government commitment to SMR deployment, was critical in securing Romania's position as the first European deployment site. Supply chain access followed from that early partnership positioning, not the reverse. Third, the regional hub ambition is explicit and backed by investment: Romania is positioning itself as the Southeast European centre of gravity for SMR deployment and associated supply chain activity. This ambition is directly competitive with any equivalent positioning Greece might seek, and the fact that Romania has a seven-year head start and a confirmed FID makes the competitive dynamics between the two countries an urgent consideration for Greek industrial and energy policy.

2.5.5 Comparative Patterns and Implications for Greece

The four case studies, taken together, reveal five patterns that hold across different starting conditions, governance models, and deployment timelines.
Institutional construction precedes industrial participation. In every case, the countries that have successfully entered the nuclear supply chain did so after establishing credible regulatory bodies, owning entities, and workforce development programmes, not simultaneously with industrial engagement, and certainly not after it. The UAE built FANR before Barakah broke ground. Poland's Baker McKenzie assessment found that its strongest scores were precisely in the institutional and regulatory dimensions that Romania had also prioritised. Türkiye's creation of TÜNAŞ, though later than it should have been, reflects the same recognition. For Greece, which has neither a nuclear regulator nor a state nuclear entity, this institutional dimension is the critical first-order priority.

Early vendor engagement determines supply chain access. Romania's 2019 MoU with NuScale was a deliberate early positioning decision that secured Romania's status as the preferred European deployment site before the broader European SMR market had consolidated. Poland's KGHM partnership with NuScale and Türkiye's discussions with Rolls-Royce and Westinghouse follow the same logic. Supply chain opportunities flow from commercial relationships, and commercial relationships are built years before contracts are awarded. Countries that wait for the market to mature before engaging with vendors will find the partnerships already formed.

The qualification gap must be addressed before demand arrives. Poland's divided supply chain, companies already qualified through international nuclear export work, and companies that did not believe the programme was real, illustrates the cost of delayed qualification investment with precision. The time required to achieve ISO 19443 certification, build a nuclear-grade quality management system, and accumulate the reference base that makes a company credible to a vendor is measured in years. The demand signal from a confirmed SMR project compresses timelines but does not eliminate qualification requirements. Greece's relevant industries must begin this process now, against future demand rather than in response to it.

Local content policy drives supply chain depth. Türkiye's 56% domestic content achievement on Akkuyu, Poland's 40% target for Choczewo, and Romania's job creation projections for Doicești all reflect the same understanding: local content requirements, credibly set and consistently enforced, are the primary mechanism through which host countries convert nuclear investment into durable industrial capability. Without explicit local content commitments embedded in procurement structures, the supply chain benefits of nuclear investment flow primarily to established incumbent vendors and their existing supplier networks.

The coal-to-nuclear transition is a narrative and a supply chain opportunity simultaneously. Romania's decision to site the Doicești SMR at a former coal plant was a just transition statement that mobilised political support, aligned the project with EU climate objectives, and created a workforce transition narrative that existing supply chain participants in the energy sector could relate to. Western Macedonia offers Greece the same framing opportunity, with the additional advantage that its coal infrastructure, grid connections, and workforce demographics are directly analogous to the Doicești context. The question is whether Greece develops the institutional and policy framework to exploit that opportunity before Romania completes the regional positioning that its seven-year head start makes possible.

Chapter 3. Greece's Industrial Base

3.1 Greek Industrial Capabilities Relevant to SMR Supply Chains

The economic case for Small Modular Reactors depends, as demonstrated in the SMR Deployment Handbook that forms the analytical backbone of this report, on the transition from bespoke, site-built nuclear construction to standardised serial manufacturing. That transition requires an industrial ecosystem capable of delivering precision-engineered components, large-scale civil construction, specialised piping and cabling systems, qualified welding and fabrication, and the logistics infrastructure to move heavy equipment reliably from factory to site. The central question this section addresses whether Greece, a country with no nuclear industry, has the industrial substrate from which one could credibly be built, and which components of that substrate are most directly relevant to the SMR supply chain as it is taking shape in Europe. The answer, examined category by category below, is more affirmative than it might appear from a starting point of zero nuclear experience. Greece has demonstrated high-performance industrial capabilities in several sectors, precision steel manufacturing, large-scale piping for the energy sector, maritime fabrication, high-voltage cable production, large-scale civil engineering and project delivery, and nuclear-adjacent scientific research, each of which maps onto a distinct and documented requirement of the SMR supply chain. What Greece lacks is the certification infrastructure, the nuclear-grade quality assurance culture, and the regulatory familiarity that would allow these capabilities to be deployed in a nuclear context without significant preparatory investment. Understanding the genuine assets and the genuine gaps, is the prerequisite for any credible strategy.

3.2 Steel Manufacturing and Metallurgical Industry

Greece's metallurgical sector, centered on the Viohalco Group, represents the most mature and internationally competitive element of its heavy industrial base. Viohalco, listed on both Euronext Brussels and the Athens Stock Exchange, is a holding group encompassing steel, copper, aluminium, cables, and pipe manufacturing subsidiaries operating in eight countries with consolidated revenues exceeding €7.2 billion in 2025 (51). Its primary steel production operations in Greece are Sidenor Steel Industry, operating two electric arc furnace mills in Thessaloniki and Almiros with a combined capacity of approximately 2 million tonnes per year, specialising in long products, reinforcing bar, and wire rod (52). These facilities provide the foundational steel production capacity that large-scale industrial construction, including nuclear civil works, requires.

Of particular relevance to the SMR supply chain is Corinth Pipeworks (CPW), Viohalco's steel pipe manufacturing subsidiary and one of the world's leading manufacturers of large-diameter welded steel pipes for the energy sector. Operating from a highly integrated manufacturing facility at Thisvi in Viotia, Greece, CPW operates four pipe mills including both Longitudinal Submerged Arc Welding (LSAW) and Helical Submerged Arc Welding (HSAW) production lines, a recent capacity expansion that enables the two mills to operate independently in parallel for the first time (53). CPW's client base reads as a directory of global major energy companies: BP, Shell, ExxonMobil, TotalEnergies, ENI, EDF, ENGIE, Saipem, TechnipFMC, and Saudi Aramco are among the organisations for which it has delivered complex, demanding pipeline projects (54). By mid-2025, CPW's order backlog stood at €560 million, up from €430 million at year-end 2024, supported by contracts including a framework agreement with France's Réseau de Transport d'Électricité, a North Sea offshore project with Subsea7, and the HyNet CO2 pipeline in Liverpool Bay (55).
The connection to the SMR supply chain is specific and documented. Nuclear installations require extensive, precisely manufactured piping systems, primary coolant loops, secondary circuit pipework, containment penetrations, and auxiliary system lines, all of which must meet nuclear-grade standards and be fabricated with traceable material certification and

documented quality assurance. CPW's experience with high-specification, safety-critical pipeline systems for offshore, hydrogen, and carbon capture applications, sectors whose quality, certification, and traceability requirements approach nuclear-grade standards, provides a more relevant industrial baseline than general construction. CPW has also been awarded, and manufactured in Greece, a contract from DESFA for hydrogen-certified pipelines compliant with ASME B31.12 Option B, the specification standard used for high-pressure hydrogen transport, demonstrating engagement with advanced certification frameworks beyond standard energy sector requirements (56). The gap between this baseline and nuclear-grade N-stamp or RCC-M certification is real and would require a structured multi-year qualification programme, but the starting point is considerably closer than it would be for a general industrial manufacturer with no prior energy sector pedigree.

3.3 High-Voltage Cable Manufacturing

Hellenic Cables, the cable manufacturing subsidiary of Cenergy Holdings within the Viohalco group, is one of the largest cable producers in Europe, manufacturing power and telecommunications cables as well as submarine cables from facilities in Corinth and Thiva, Greece (57). The company has invested substantially in subsea and high-voltage cable capacity, with capital expenditure in H1 2025 alone of €49 million for the final phase of offshore cable plant expansion in Corinth and €40 million for upgrades at the Thiva plant to make it a best-in-class facility for medium-voltage, high-voltage, and extra-high-voltage underground cables (55). Cenergy's combined order backlog exceeded €4 billion during 2024 and early 2025, driven by European grid reinforcement and offshore wind interconnection projects, with multi-year delivery slots through 2026 to 2028 (58). Nuclear power plants require highly specialised electrical cabling systems, including fire-resistant, radiation-tolerant, and Class 1E safety cables for reactor control systems, that must meet international nuclear standards. Hellenic Cables' experience with high-specification, rigorously tested submarine and high-voltage cables does not directly qualify it for nuclear cable supply without additional certification investment. However, the company's demonstrated ability to manufacture and deliver complex, multi-kilometer cable systems for demanding offshore and grid infrastructure applications represents an industrial capability that, with targeted qualification, could be oriented toward the balance-of-plant cabling requirements of an SMR installation, where the majority of cable volume is conventional, non-Class-1E instrumentation and control cabling rather than nuclear-qualified safety systems.

3.4 Shipbuilding and Heavy Fabrication

Greece's shipbuilding industry, after more than a decade of decline and underinvestment, is undergoing a material revival driven by private investment, naval procurement, and renewed international demand. Ship repairs at Greek yards more than doubled over the decade from 2013, climbing from 330 to 700 in 2024 according to data from the Hellenic Statistical Authority (ELSTAT) (59). The revitalisation is concentrated at four principal facilities: Skaramagkas Shipyard, acquired by shipowner George Prokopiou in 2023 and operating with the explicit ambition of returning to international repair and newbuild markets; Elefsis Shipyard, operated by ONEX Shipyards and Technologies and backed by a $125 million loan from the US International Development Finance Corporation; Neorion Shipyard in Syros; and Salamis Shipyards, which has emerged as a significant player in European naval construction (60), (61). Together, Neorion and Elefsis have repaired over 500 vessels since ONEX took over in 2019.

The Salamis Shipyards case is the most strategically significant for this analysis. Under a collaboration with Naval Group that began in October 2022, Salamis has become a fabricator of pre-outfitted hull blocks for the FDI frigate programme, the most advanced surface combatant in service with the French Navy, achieving a completeness level of 80.4% on delivered blocks, among the highest achieved in the programme (62). By April 2025, more than ten blocks destined for the Hellenic and French navies had shipped from Salamis to

Naval Group's Lorient facility, making Salamis the first Greek defence contractor to deliver primary structural components to a foreign fleet. A six-year Follow-on-Support agreement was signed with Naval Group in November 2024, providing long-term visibility for the facility.

The relevance to SMR supply chains is structural rather than direct. SMR module manufacturing, the factory fabrication of reactor pressure vessels, containment structures, and integrated module assemblies, shares significant characteristics with advanced naval hull block fabrication: precision steel cutting and welding to tight tolerances, systematic pre-outfitting before transport to the final assembly site, quality assurance documentation, and work on large, complex assemblies requiring specialised lifting and handling equipment. The Salamis experience with Naval Group demonstrates that a Greek shipyard can meet the demanding quality and delivery standards of a Tier 1 European defence contractor. That is an industrial credential that the SMR supply chain will recognise. As the SMR industry moves toward the aerospace and shipbuilding manufacturing model, factory assembly of standardised modules for site installation, the organisational and physical capabilities being demonstrated at Salamis represent a relevant and scalable industrial asset. The shipbuilding industry in Greece also contributes approximately 1.5% of GDP with projections to reach 2.5% within five years, reflecting the sector's expanding economic and industrial weight (61).

3.5 Civil Engineering and Large-Scale Project Delivery

The civil works component of SMR construction, site preparation, foundation engineering, containment building construction, cooling water intake structures, and balance-of-plant civil infrastructure, is typically not N-stamped nuclear work but requires large-scale civil engineering capability, experience with regulated, safety-critical environments, and the ability to manage complex multi-contractor projects under demanding quality regimes. Greece's construction sector, dominated by a cluster of major groups including GEK TERNA, INTRAKAT, AVAX, and METKA, has demonstrated precisely these capabilities across a pipeline of increasingly large and complex infrastructure projects funded by the EU Recovery and Resilience Facility and national public-private partnership programmes (63). GEK TERNA, through its TERNA subsidiary, constructed the 877 MW Komotini Combined Cycle Gas Turbine plant, a complex energy facility jointly owned with Motor Oil, demonstrating direct EPC capability in large-scale power generation infrastructure (64). The GEK TERNA–RENCO consortium was also awarded construction of a €1 billion data centre complex for Microsoft in Attica, a project who’s electrical, structural, and systems integration demands are analogous in several respects to the balance-of-plant requirements of an SMR installation (65). INTRAKAT, whose total backlog has exceeded €5 billion following its acquisition of Aktor, is active across energy, environmental, and infrastructure sectors and has experience with regulated construction environments in both domestic and international markets.

For the SMR supply chain, the civil engineering sector's primary potential contribution is as the lead civil works and balance-of-plant contractor for a domestic Greek SMR programme, potentially in consortium with international nuclear EPC specialists who would provide the nuclear-specific construction expertise and quality assurance systems. This is precisely the model employed at the Darlington BWRX-300 project in Canada, where Ontario Power Generation, Aecon, SNC-Lavalin, and GE Hitachi are structured as an Integrated Project Delivery consortium, combining domestic civil capability with international nuclear expertise, and it is a model that could be adapted for a Greek programme.

3.6 Nuclear Research and Scientific Infrastructure

Greece's nuclear research infrastructure is modest by comparison with established nuclear nations but is more substantive than its absence from the civilian nuclear power sector might suggest. The National Centre for Scientific Research "Demokritos" (NCSR Demokritos), founded in 1961 and Greece's largest multidisciplinary research centre, was originally established as a nuclear research centre and retains a dedicated Institute of Nuclear and Radiological Sciences, Technology, Energy and Safety (INRASTES) as one of its five core research institutes (66). With approximately 1,300 scientific, technical, and administrative professionals and funding drawn from state resources, European programmes, and industry collaboration, Demokritos conducts research spanning nuclear and particle physics, energy and environment, nanotechnology, and advanced materials (67). The centre has presented at the 2nd Nuclear Energy Conference in Athens in November 2025, signalling active engagement with the current Greek nuclear policy debate. Greece is also a member state of CERN, the European Organization for Nuclear Research, with a meaningful presence in its scientific programme. The Greek scientific workforce at CERN currently includes 40 university professors participating in experiments, 28 PhD candidates, 54 PhD holders on research fellowships, and 30 Greek physicists, engineers, and administrative officers in permanent positions (68). Research teams from the National Technical University of Athens, Aristotle University of Thessaloniki, the University of Ioannina, the University of Patras, and NCSR Demokritos participate in major CERN experiments including ATLAS, CMS, ALICE, CAST, ISOLDE, and n_TOF. This scientific community, while oriented toward fundamental physics rather than reactor engineering, represents a base of advanced physics and engineering training that is directly relevant to the regulatory science, safety analysis, and instrumentation and control disciplines that a nuclear programme requires.

The gap between Greece's current nuclear research capacity and the staffing requirements of an SMR regulatory body or operational programme is large and would take a decade or more to close through domestic training alone. The relevant lesson from the IAEA Milestones Approach, applied by the UAE, Kenya, and other newcomer states, is that this gap is closed through a combination of domestic institutional development and structured human resource partnerships with experienced nuclear nations, a pathway that Greece's bilateral relationships with France, the United States, and increasingly with Romania places within reach.

3.7 The Certification Gap

The most consequential limitation running across all of the industrial capabilities described above is the absence of nuclear-grade certification. As the SMR Deployment Handbook establishes, any company supplying components to a nuclear project must demonstrate that its products meet nuclear-grade quality standards, either through the ASME N-stamp system, the recognised benchmark for nuclear-grade mechanical component supply, or through the European equivalent, ISO 19443, which adds approximately 200 nuclear-specific requirements to the baseline ISO 9001 quality management framework (33). No Greek industrial company currently holds an N-stamp or ISO 19443 nuclear certification. This is not a barrier to participation in balance-of-plant, civil works, or non-nuclear systems supply, which constitute the majority by value of any SMR project's construction cost. However, it is a barrier to participation in the nuclear-grade component supply chain, reactor pressure vessels, primary circuit piping, steam generators, reactor internals, until a structured multi-year qualification programme has been completed. The path to certification is documented and well-understood. It requires the development and implementation of a nuclear-grade Quality Assurance programme compliant with ASME NQA-1 or the equivalent ISO 19443 framework, personnel training and certification, facility and process upgrades to meet nuclear cleanliness and traceability requirements, and a sustained commitment across multiple renewal cycles before a single nuclear-grade component can be supplied. For a company like Corinth Pipeworks, which already operates high-specification quality management systems for offshore energy and hydrogen infrastructure, the incremental distance to ISO 19443 certification is significantly shorter than it would be for a general manufacturer. For a shipyard like Salamis, which operates under defence procurement quality standards, the pathway is analogous but would require nuclear-specific extensions. Neither pathway is short, the realistic timeline from commitment to first nuclear-grade supply is three to five years for a well-prepared industrial organization, but both are feasible, and both would be accelerated materially by a clear government policy signal supporting nuclear supply chain qualification as a national industrial priority, independent of any deployment decision.

3.8 Non-Destructive Testing: A Greek Capability with Direct Nuclear Relevance

Non-destructive testing (NDT) occupies a distinct and particularly important position in the nuclear supply chain, and it is an area where an existing Greek capability can be identified with greater specificity than in most other industrial domains covered in this section. In nuclear manufacturing and operations, NDT is a regulatory requirement embedded throughout the entire lifecycle of the plant. The IAEA recognises NDT as a key tool for quality control, safety, and reliability at every stage of nuclear plant construction and operation, and the American Society of Mechanical Engineers (ASME) and Nuclear Regulatory Commission (NRC) jointly regulate the inspection standards that nuclear plants in the United States and many other jurisdictions must meet (69). During manufacturing, NDT is applied to verify the integrity of reactor pressure vessel welds, primary circuit piping, heat exchangers, containment structures, and steam generators before they are assembled into the plant. During operations and maintenance, in-service inspection (ISI) programmes use NDT continuously to detect fatigue cracks, stress corrosion, erosion, and material degradation in components that cannot be replaced without significant downtime and cost (70). The principal NDT techniques used in nuclear power plants span conventional and advanced methodologies. Ultrasonic Testing (UT), and its advanced evolution, Phased Array Ultrasonic Testing (PAUT), is the most widely applied nuclear inspection method, used to detect internal flaws, measure wall thickness, and characterise weld defects in high-pressure piping and pressure vessel welds (71). Radiographic Testing (RT) using gamma rays and X-rays provides volumetric inspection capability for weld joints, detecting voids, inclusions, cracks, and porosity. Eddy Current Testing (ECT) is applied extensively to steam generator tube inspection, one of the most demanding and safety-critical inspection programmes in an operating nuclear plant. Magnetic Particle Inspection (MPI) and Liquid Penetrant Testing (PT) detect surface-breaking and near-surface discontinuities in ferritic and non-ferritic materials respectively. Alternating Current Field Measurement (ACFM) provides crack detection and sizing capability for surface-breaking defects without requiring the removal of coatings, a significant operational advantage in confined or radiologically sensitive environments. Beyond these established techniques, the nuclear sector is increasingly integrating automated robotic inspection systems, digital radiography, artificial intelligence-assisted flaw characterisation, and drone-mounted sensors to access geometrically complex or radiologically hazardous areas without human entry (70). Each of these techniques demands personnel certified to recognised international standards, most commonly PCN (Personnel Certification in NDT) or ASNT (American Society for Non-Destructive Testing) Level II and Level III. And for nuclear application, supplementary qualification under the specific requirements of programmes such as ASME Section XI or the IAEA's inspection qualification frameworks (72).

3.9 SpectrumNDT: A Greek Case Study in Advanced Inspection Capability

The most directly relevant Greek example in this domain is SpectrumNDT, an Athens-based NDT services company headquartered in Piraeus, operating across six industrial sectors: shipping, oil and gas, energy and process industry, steel construction, infrastructure, and yachting (73). SpectrumNDT's service portfolio spans both conventional and advanced NDT methodologies, encompassing Industrial Radiographic Testing with gamma rays and X-rays, Ultrasonic Testing by both conventional and Phased Array techniques (PAUT), Magnetic Particles Inspection, Liquid Penetrants Testing, Hardness Testing, Positive Materials Identification (PMI), Alternating Current Field Measurement (ACFM), Eddy Currents Testing, Composites Inspection, Coating Inspection, Post Weld Heat Treatment (PWHT), Laser

Alignment and Vibration Analysis, On-Site Metallography and Field Metallurgical Replication, and Drone Inspections for inaccessible or hazardous environments (73). The company also holds a dedicated consulting capability, providing Level III support, Inspection and Test Plan (ITP) review, and site management support for resolving NDT-related issues in complex industrial environments.

What distinguishes SpectrumNDT within the context of this report is the combination of two specific dimensions. The first is its documented track record in safety-critical energy infrastructure. The company's project portfolio includes NDT services on a 110 MW Combined Heat and Power Plant in Ljubljana, a 740 MW Simple Cycle Power Plant in Tobruk, the Athens Olympic Stadium Sports Complex, and the Athens Metro Line 3 extension to Piraeus, a mix of large-scale energy facilities and high-specification civil and transport infrastructure that demonstrates the operational discipline required to deliver inspection services under regulated, safety-managed environments (74). The second distinguishing dimension is the company's active investment in autonomous robotic inspection technology through its Research and Development programme. SpectrumNDT has participated in the development of four proprietary robotic inspection systems: Robohop, described as the world's most agile inspection robot with thickness gauging capabilities; ShipTest, a combined ACFM and PAUT weld inspection and corrosion mapping robot; Autowinspec, an autonomous wind turbine blade inspection robot; and XScan, a laser-guided inspection robot for the NDT of thin steel structures (75). This investment in autonomous inspection robotics is directly aligned with the direction that nuclear inspection technology is taking globally. As nuclear plants increasingly require inspection in confined, high-radiation environments where human entry is impractical or prohibited, robotic inspection systems carrying PAUT, eddy current, and visual inspection payloads are becoming the standard delivery mechanism for in-service inspection programmes, exactly the application domain that SpectrumNDT's R&D portfolio is addressing. The company's sectoral footprint in shipping and oil and gas is also relevant to the nuclear context. The maritime sector, particularly its application to LNG carriers, floating storage and regasification units, and naval vessels, imposes inspection standards for hull welds, pressure vessels, and piping systems that are among the most demanding in any non-nuclear industrial environment. SpectrumNDT's long-standing presence in this sector, demonstrated by client endorsements from shipping technical management and TÜV Austria Hellas, indicates a quality culture and operational discipline that is closer to nuclear-grade working practice than the general construction or civil engineering sectors.

SpectrumNDT does not currently hold nuclear qualification under ASME Section XI, the NRC's inspection requirements for in-service nuclear plant inspection, or the equivalent European frameworks applicable to the SMR projects now advancing in Romania and the United Kingdom. This is the definitive gap between its current capability and nuclear supply chain participation in inspection roles. However, the qualification pathway for NDT organisations differs in an important respect from the pathway for component manufacturers. An NDT organisation seeking to participate in nuclear inspection programmes does not require N-stamp certification that is a manufacturing qualification. What it requires is personnel certified to nuclear-specific qualification programmes, a quality management system documented to nuclear QA standards (ASME NQA-1 or ISO 19443), and the successful completion of qualification trials demonstrating technique capability on nuclear-relevant geometries and flaw types under the Performance Demonstration Initiative (PDI) or equivalent scheme (69). These requirements are demanding, but the timeline to qualification, two to four years for an organisation that already operates advanced NDT techniques in safety-critical environments, is significantly shorter than the manufacturing certification pathway. For a company of SpectrumNDT's technical capability, the investment required is principally one of personnel qualification and quality system extension, not fundamental technique development or capital expenditure.

The SpectrumNDT case illustrates a broader point about the structure of the nuclear supply chain that is relevant for Greek industrial policy. NDT services represent one of the most accessible entry points into nuclear supply chain participation for a country without a nuclear history. Unlike component manufacturing, which requires capital-intensive N-stamp certification and years of nuclear-grade quality system development, NDT service provision in balance-of-plant and civil construction roles does not require nuclear qualification at all, standard industrial NDT standards apply to the vast majority of welds, structural steel, and concrete inspection on any large industrial construction site, including nuclear ones. For nuclear-specific components and in-service inspection, the qualification investment is real but is substantially lower in capital terms than manufacturing certification, and the personnel-based nature of NDT qualification means that the investment can be scaled incrementally as qualified individuals accumulate experience and certification rather than requiring large upfront facility investment.

For Greek NDT companies, and for SpectrumNDT specifically, the practical pathway into nuclear supply chain participation begins with the European SMR projects that are already advancing. The Doicești NuScale project in Romania, the BWRX-300 at Darlington in Canada, and the Rolls-Royce SMR programme in the United Kingdom will all require NDT services across construction, commissioning, and in-service inspection phases. These projects will be looking for qualified NDT providers with advanced technique capability, experience in safety-critical energy infrastructure, and the ability to deploy robotic inspection systems in demanding environments. A Greek NDT company that begins the qualification process now, in 2026, is positioned to participate in the first European SMR construction cycle in the early 2030s, provided the investment in nuclear personnel qualification and QA system extension is initiated within the current policy window.

This is the most time-sensitive supply chain opportunity identified in this section, precisely because the lead time to qualification is shorter than in any other domain. It is also a relatively low-capital opportunity that does not require government procurement or industrial policy intervention to initiate, it requires a commercial decision by the company and, ideally, a policy framework that creates awareness of the opportunity and potentially supports personnel certification costs through applicable European or national training funding mechanisms.

Practitioner experience within the Greek NDT sector indicates that the company-level qualification pathway is not the only entry mechanism available to nuclear-uninitiated NDT firms. An alternative and more immediately accessible route is the engagement of individually certified NDT personnel, holding ASNT Level II or Level III nuclear-specific qualifications, directly by nuclear main contractors, independent of the employing company's own certification status. This individual-certification pathway represents a realistic near-term entry point for Greek NDT professionals, and should be pursued in parallel with SpectrumNDT's company-level ISO 19443 qualification programme rather than treated as a secondary option *(Stakeholder Consultation: Emmanuela Manta, SpectrumNDT, May 2026. [Cross-reference Appendix D])*.

3.10 ONEX Shipyards and the Hanwha Ocean Partnership

Greece's most strategically significant industrial asset for SMR supply chain participation is the convergence of physical infrastructure, US strategic investment, and a South Korean technology partnership at a single facility: the Elefsina shipyard operated by ONEX Shipyards and Technologies. The ONEX case study is examined here not because shipbuilding and SMR module manufacturing are identical industrial activities, but because the Elefsina facility demonstrates, in combination, the exact cluster of characteristics that the emerging SMR supply chain's serial manufacturing logic requires, and does so at a scale and with an institutional backing that no comparable facility in Southeast Europe possesses.

The Physical Infrastructure

The Elefsina facility occupies approximately 250,000 square metres of industrial waterfront on the Saronic Gulf, approximately 20 kilometres west of central Athens. The yard's dry dock infrastructure accommodates vessels of up to 220,000 deadweight tonnes, providing the heavy-lift and deep-water berth capability that large-format module staging demands (76). The facility's crane infrastructure, with lifting capacities in the hundreds of tonnes, is directly relevant to the handling of reactor pressure vessels, steam generator assemblies, and large integrated module units whose dimensions and weight profiles are broadly comparable to the major structural blocks and mechanical assemblies that a shipyard of this class routinely manages. The co-location of fabrication workshops, heavy-lift capability, and direct deep-water port access in a single bounded facility is the physical configuration that SMR module logistics requires: components are fabricated or received, staged, and loaded for maritime transport to deployment sites within the same operational perimeter. This is precisely the logistical model that the SMR industry is designed around, factory assembly of standardised modules, maritime transport to site, minimal on-site construction, and Elefsina's physical layout is structurally suited to it.

The US Strategic Investment

In 2023, the US International Development Finance Corporation committed a USD 125 million loan to ONEX Shipyards for the development and modernisation of the Elefsina facility (77). The DFC's mandate combines development finance with explicit US national security objectives, and its investment decisions in strategic infrastructure reflect a government-level assessment of geopolitical value. The Elefsina commitment sits alongside the DFC's broader Southeast European energy security portfolio, which includes direct investment in the Romanian NuScale project through the US Export-Import Bank, and reflects the same strategic logic: building allied industrial and energy infrastructure in a region where Russian influence has historically been leveraged through energy dependency. For the purposes of SMR supply chain analysis, the DFC loan carries two distinct implications. The first is financial: it provides the capital underpinning for the facility's upgrade to a standard of infrastructure that can compete for high-specification contracts beyond conventional ship repair. The second is political: the US government's financial commitment to Elefsina creates an institutional affinity between the facility and the US government's simultaneous investment in SMR deployment through the FIRST programme, the Ex-Im Bank financing of Romanian nuclear projects, and the broader US strategy of building SMR supply chain capacity among allied nations in Southeast Europe. No other facility in the region carries this combination of physical capability and explicit US strategic endorsement.

The Hanwha Ocean Partnership

In 2025, ONEX Shipyards and Technologies signed a cooperation agreement with Hanwha Ocean, the South Korean conglomerate's shipbuilding arm and one of the world's leading heavy industrial manufacturers (78). The strategic significance of this partnership for SMR supply chain positioning extends well beyond its immediate commercial scope. Hanwha Ocean occupies a specific position in the global defence and energy industrial landscape that is directly relevant to the nuclear sector. The company is a major fabricator of submarine pressure hulls, a manufacturing discipline that demands the same weld quality, dimensional tolerances, and quality assurance documentation as nuclear-grade pressure vessel fabrication. Its parent group, Hanwha Corporation, has a defence manufacturing portfolio that encompasses the full range of precision engineering and systems integration capabilities that nuclear-adjacent supply chains require. South Korea's nuclear industrial experience, built through the KEPCO-led deployment of APR-1400 units domestically and internationally, including the UAE Barakah project, means that Hanwha operates within a national industrial culture of nuclear-grade quality management that its partnerships carry as institutional DNA.

The operational implications for ONEX are concrete. A cooperation framework with Hanwha Ocean creates a channel through which South Korean manufacturing standards, quality assurance practices, and qualification approaches can be transferred into the Elefsina facility's operational systems. It provides ONEX with a reference partner whose nuclear-adjacent credentials are internationally recognised, which is relevant to the vendor relationship conversations that supply chain entry requires. In addition, it establishes a bilateral industrial relationship with a South Korean conglomerate at precisely the moment when South Korean nuclear technology, KEPCO's APR-1400 and the emerging SMR programmes of Hyundai Engineering and KEPCO Nuclear Fuel, is actively competing for European deployment contracts in Poland, the Czech Republic, and the broader Central and Eastern European market. The Hanwha Ocean partnership is, in this respect, both a manufacturing upgrade and a market positioning instrument.

The Qualification Gap and the Pathway

ONEX Shipyards does not currently hold nuclear supply chain qualification under ASME NQA-1, ISO 19443, or the N-stamp programme that is required for nuclear pressure boundary components. This is the definitive gap between the facility's current capability and formal nuclear supply chain participation in high-tier roles. It is a real gap, and it should not be minimised. However, the structure of this gap is importantly different from the situation facing a Greek company with no relevant industrial heritage. ONEX is a proven heavy fabricator operating a US-strategic-investment-backed facility with a South Korean defence and heavy industrial partner. The qualification pathway it faces is one of formal certification of existing capability, not the development of capability from scratch.

The most accessible near-term qualification route for ONEX is the ISO 19443 certification pathway, the quality management standard specific to the nuclear supply chain that sits below the N-stamp threshold and governs Tier 2 and Tier 3 supply chain participation (79). ISO 19443 certification for a facility of ONEX's existing industrial maturity, with an established quality management system aligned to naval and heavy industrial standards, is achievable on a two-to-three year timeline with appropriate investment in quality system documentation and third-party audit preparation. This certification would open participation in the balance-of-plant fabrication, structural steel, module staging, and maritime logistics roles that constitute the first realistic tier of SMR supply chain engagement for a shipyard facility. The N-stamp pathway, which governs nuclear pressure boundary components, represents a longer-horizon qualification objective that would be pursued in a second phase, potentially in partnership with a qualified nuclear fabricator, following the establishment of ISO 19443 credentials and the accumulation of nuclear project reference experience.

The Case Study's Strategic Significance

The ONEX case study matters for this report's argument in a specific and bounded way. It is evidence that Greece possesses, at Elefsina, a facility whose physical, financial, and partnership credentials place it closer to nuclear supply chain qualification than any comparable facility in Southeast Europe, and that the investment required to bridge the remaining gap is one of quality system formalisation and certification, not fundamental industrial development. In the language of the NEA's supply chain readiness framework, Elefsina represents a demonstrable industrial track record in directly adjacent disciplines, backed by US strategic investment and a South Korean heavy industrial partnership that constitutes the minimum evidential foundation on which a credible nuclear qualification programme can be constructed. That foundation exists at no other facility in the region. What remains is the decision to use it.

Project Trident: The Strategic Alliance Formalised

On 29 May 2026, the cooperation framework between ONEX Shipyards and Hanwha Ocean was elevated from an initial MoU to a full strategic alliance agreement, formalised under the designation Project Trident at a signing ceremony held at the US Ambassador's residence in Athens. The event was attended by US Ambassador Kimberly Guilfoyle, Deputy Foreign Minister Haris Theoharis, the Korean Ambassador to Greece, and the CEOs of both ONEX and Hanwha Ocean, a level of governmental and diplomatic representation that signals unambiguously that Project Trident is a strategic initiative with explicit trilateral backing from Greece, the United States, and South Korea (80).

The investment programme formalised under Project Trident totals €1.35 billion, structured across three phases. The first phase, valued at €150 million, targets the enhancement of ship maintenance and repair capabilities through new large-scale facilities and dry docks. The second and third phases extend the programme toward the full transformation of the ONEX shipyard into a vertically integrated naval construction, maintenance, and support installation, with an explicit design target of up to 70% Greek domestic added value across the programmes to be developed. ONEX CEO Panos Xenokostas described the agreement as one that changes the parameters of the Greek shipbuilding industry, and positioned the Hanwha partnership and US backing as the foundation for Greece to evolve into a central shipbuilding and industrial hub for the Mediterranean and Southeast Europe. US Ambassador Guilfoyle characterised Project Trident as a strategic initiative that goes beyond a business cooperation, a joint commitment of Greece, the USA, and South Korea to security and prosperity in the wider region.

For the purposes of this report's argument, Project Trident represents a qualitative step change in the evidential foundation of the Elefsina supply chain case. What was, at the time of the initial Hanwha cooperation agreement, a promising bilateral industrial framework with significant but unrealised potential has become, with Project Trident, a formally committed, government-endorsed, tripartite investment programme of €1.35 billion with diplomatic endorsement at Ambassador level. The physical infrastructure, US strategic investment, and South Korean industrial partnership that the preceding sections analyse as individually significant are now combined within a single, formally structured strategic alliance whose scale and institutional backing have no precedent in the history of Greek industrial development. The qualification gap that remains, the ISO 19443 certification and the longer-horizon N-stamp pathway, is unchanged by Project Trident. However, the asset base against which that qualification investment is applied has been transformed from a strong regional candidate into the most credible dual-use heavy fabrication and maritime hub in Southeast Europe. The decision to use it, referenced in the preceding section's closing sentence, has now been made at the level of three governments. What remains is the nuclear-specific qualification layer that converts that decision into supply chain participation.

3.11 Skaramagkas Shipyards and the Korean Nuclear Industrial Thread

The HHI-Skaramagkas Cooperation Agreement

On 2 June 2026, Skaramagkas Shipyards signed a Memorandum of Understanding with HD Hyundai Heavy Industries, one of the world's largest shipbuilding and industrial conglomerates, at the Poseidonia 2026 international maritime exhibition in Athens (81). The agreement targets the joint development of surface vessels for the Hellenic Navy and Coast Guard with a view to the European naval market, MRO services covering maintenance, repair, and upgrade of commercial and naval vessels, and potential collaboration on next-generation submarine programmes. The MoU explicitly encompasses the upgrade programme for the four MEKO-class frigates of the Hellenic Navy, a contract whose technical complexity and quality management requirements represent some of the most demanding defence-grade manufacturing standards in the European naval sector (82).

The agreement arrives at a moment of documented operational momentum at Skaramagkas. Since resuming commercial operations in February 2024, the shipyard has successfully completed maintenance and repair work on more than 120 vessels, executed a maintenance contract for a Type 214 Papanikolis-class submarine of the Hellenic Navy, and entered a partnership with German naval contractor TKMS for the upgrade of submarines of the same class. The HHI MoU is a strategic extension of an already active operational programme by a conglomerate that has assessed Skaramagkas's capabilities and found them to meet the threshold that HD Hyundai's quality standards require.

HD Hyundai Heavy Industries as a Nuclear Manufacturing Partner

The strategic significance of the HHI-Skaramagkas MoU extends well beyond its immediate naval and commercial scope, for a reason that has received no attention in the Greek industrial policy conversation: HD Hyundai Heavy Industries is as of 2025-2026, one of the most actively positioned nuclear manufacturing partners in the global SMR supply chain.

In March 2025, HD Hyundai Heavy Industries signed a strategic cooperation agreement with TerraPower, the Bill Gates-founded US advanced nuclear company, for the expansion of the manufacturing supply chain for the Natrium sodium-cooled SMR (83). The agreement combines HD Hyundai's manufacturing expertise with TerraPower's reactor technology, and is designed to build new supply chain capacity to enable large-scale production and global deployment of Natrium plants. This initial agreement was followed in May 2026 by a Framework Agreement on Natrium Reactor Supply, under which HD Hyundai Heavy Industries was selected as the preferred negotiator to manufacture and supply key facilities for TerraPower's sodium reactor main equipment, specifically the Reactor Enclosure System (84). Separately, HD Hyundai also signed a trilateral business cooperation agreement with TerraPower and Hyundai Engineering and Construction to collaborate on next-generation Natrium reactor projects globally, covering engineering, procurement, construction, and the supply of key equipment for future nuclear projects.

The agreement positions HD Hyundai Heavy Industries as a preferred manufacturer for key Natrium Reactor Enclosure System components, leveraging the company's heavy fabrication expertise and industrial-scale production capabilities developed through decades of shipbuilding and offshore construction work. TerraPower recently received approval from the US Nuclear Regulatory Commission to build the world's first commercial SMR, accelerating its commercial push. HD Hyundai is therefore an active, contracted, NRC-validated nuclear manufacturing partner whose industrial capabilities have been assessed and approved at the highest level of the US nuclear regulatory framework.

The institutional lineage is equally significant. The framework agreement builds on a 2024 deal in which HD Hyundai Heavy Industries was selected by TerraPower to manufacture the reactor vessel for the first Natrium plant in Wyoming (85). HD Hyundai's nuclear manufacturing engagement with TerraPower therefore predates the Skaramagkas MoU by two years and has been progressively deepened through a sequence of increasingly specific and binding agreements. From strategic cooperation to preferred bidder status to framework supply agreement, all reflecting a sustained and verified nuclear manufacturing capability.

The Corridor as a Dual Korean Nuclear Industrial Ecosystem

The simultaneous presence of Hanwha Ocean at Elefsina under Project Trident and HD Hyundai Heavy Industries at Skaramagkas under the Poseidonia 2026 MoU creates a strategic configuration that is without precedent in Southeast European industrial history, and whose implications for Greece's nuclear supply chain positioning are more significant than either agreement individually.

Both Hanwha Ocean and HD Hyundai Heavy Industries are subsidiaries of major Korean conglomerates whose industrial culture was built, in substantial part, through the KEPCO-led domestic nuclear programme and the subsequent APR-1400 export programme in the UAE. The quality management systems, nuclear-grade fabrication capabilities, and supply chain discipline that Korean shipbuilding conglomerates bring to their industrial partnerships are the operational outputs of a national nuclear manufacturing programme that has built and delivered more nuclear generating capacity in the past two decades than any other country outside China (86). When Hanwha Ocean and HD Hyundai Heavy Industries establish operational partnerships with Greek shipyards, they bring the institutional quality culture of that programme into direct contact with Greek industrial operations.

For the Skaramagkas-Elefsina corridor, the consequence is concrete. Both anchor shipyards of the corridor are now operating within the quality management ecosystems of Korean conglomerates that hold active nuclear manufacturing commitments, Hanwha Ocean through the KEPCO nuclear supply chain lineage and the Project Trident investment framework, HD Hyundai Heavy Industries through the TerraPower Framework Agreement and the Natrium Reactor Enclosure System preferred supplier designation. The ISO 19443 certification gap that Section 6.3 identifies as the most immediate qualification barrier for Greek companies is real, but the baseline from which the corridor's two anchor shipyards begin that qualification journey is categorically higher than the baseline available to any comparable industrial zone in Southeast Europe. The nuclear quality culture is not something that needs to be imported or constructed from scratch at these facilities. It is arriving, organically and contractually, through the Korean partnerships that the market has independently chosen to establish.

The Skaramagkas-Elefsina corridor is not, therefore, a Greek industrial asset that needs nuclear relevance retrofitted onto it. It is a corridor that is being simultaneously anchored, from both ends, by two of the world's most credible nuclear manufacturing conglomerates, at the precise moment when the European SMR supply chain architecture is being determined. The policy and qualification actions recommended in Chapter 7 of this report are the means by which that structural advantage is converted into commercial supply chain participation. The structural advantage itself is already present.

3.12 METLEN and Naval Group

Greece's engagement with the global SMR supply chain is, in most respects, still at the level of potential: documented capability, demonstrated adjacency, and a set of institutional and industrial relationships that point toward nuclear supply chain participation without yet having entered it. The METLEN–Naval Group partnership represents the clearest available exception to this characterization: a signed, formal industrial cooperation agreement between Greece's largest industrial conglomerate and one of the two co-developers of the most advanced multi-jurisdictional European SMR programme currently in regulatory review. The case study examined here is important because it represents the most structurally proximate position to such participation that any Greek industrial actor currently occupies, and because the pathway from that position to formal SMR supply chain engagement is, in this case, the shortest of any identified in this report.

METLEN: The Industrial Profile

METLEN Energy & Metals, the name adopted following Mytilineos S.A.'s rebranding in 2024, is Greece's largest industrial conglomerate by revenue, with consolidated revenues exceeding €5.5 billion in 2024 and operations spanning metallurgy, energy, and defence systems across four continents (87). The company's three core divisions provide the industrial foundation on which its SMR supply chain relevance rests. The Metallurgy division, which includes the Aluminium of Greece smelter at Agios Nikolaos in Viotia, one of the largest integrated primary aluminium production facilities in Europe, provides the materials manufacturing base. The Energy division, which operates gas-fired and renewable generation assets and delivers EPC contracts for large power infrastructure projects across Greece and internationally, provides the energy sector project delivery experience. The Sustainable Engineering Solutions (SES) division, formerly the Defence Systems and EPC segment, delivers turnkey engineering, procurement, and construction contracts for complex industrial installations, including the assembly and integration of defence systems under offset arrangements with international prime contractors.

It is through the SES division that METLEN's defence industrial relationship with Naval Group has developed, and through which the most direct pathway to nuclear supply chain participation runs. The division's established capability in system integration, precision manufacturing, and defence-grade quality management places it in a different tier from most Greek industrial actors in terms of proximity to nuclear-grade standards. Defence procurement contracts, particularly those involving precision-engineered components and systems integration under the Hellenic Armed Forces' oversight framework, impose quality and traceability requirements that are structurally analogous, though not identical, to the ISO 19443 nuclear supply chain quality management standard. METLEN's SES division is already operating, in its defence work, at a level of quality discipline that is closer to nuclear-grade than the general manufacturing sector, and the investment required to formalise that proximity through ISO 19443 certification is substantially lower than it would be for a company without this industrial heritage.

Naval Group and NuWard: The Nuclear Dimension

Naval Group is not, in conventional terms, a nuclear company. It is France's premier naval defence and technology group, responsible for the design, construction, and support of France's nuclear-powered submarine and surface fleet. This identity, however, places it in a position of unique and structurally relevant nuclear industrial capability. The construction of nuclear-powered submarines demands the same precision pressure vessel fabrication, primary circuit welding, nuclear-grade materials management, and quality documentation as commercial reactor construction, in some respects, the military application is more demanding, given the operational profile and physical constraints of submarine reactor systems. Naval Group's nuclear manufacturing competence is therefore not incidental to its core business; it is constitutive of it (88).

In 2019, Naval Group became a co-developer of the NuWard SMR programme alongside EDF, CEA, and Framatome, contributing its nuclear reactor systems expertise to what has since become France's flagship European SMR candidate (89). NuWard is a 400 MWe twin-module pressurised water reactor design based on proven PWR technology, targeting European and export markets with a deployment horizon of the early 2030s. Critically for this analysis, NuWard completed the second phase of a Joint Regulatory Review by six national nuclear regulatory authorities, France, Finland, the Czech Republic, Slovakia, Sweden, and the United Kingdom, in 2025, making it the most advanced multi-jurisdictional SMR licensing process in Europe (90). The programme's regulatory maturity, combined with the bilateral nuclear technology cooperation declaration signed between Greece and France during Macron's April 2026 state visit to Athens, positions NuWard as the SMR design for which Greece has the most developed institutional and industrial connectivity of any currently in the European market (91).

The Memorandum of Understanding: Scope and Strategic Significance

In 2025, METLEN Energy & Metals and Naval Group signed a strategic Memorandum of Understanding covering cooperation across submarine and frigate programmes for global markets (92). The MoU builds on an industrial relationship that had already been developing through METLEN's participation in Naval Group's Hellenic Industrial Participation programme, the offset and industrial cooperation framework attached to Greece's procurement of four Belharra-class FDI frigates. The MoU elevates that relationship from programme-specific subcontracting to a bilateral strategic partnership framework covering future global procurement opportunities, a distinction that is significant for the nuclear supply chain argument, because it creates a permanent institutional channel between METLEN and a NuWard co-developer that is not bounded by a single programme or a single procurement cycle.

The strategic significance of this MoU for SMR supply chain positioning operates at three levels. The first is direct industrial access. A signed cooperation agreement with Naval Group places METLEN within the industrial network of a NuWard co-developer at precisely the moment when that programme's supply chain is beginning to be structured for deployment-phase procurement. Supply chain selection in nuclear programmes is not a purely competitive open-tender process; it is heavily relationship-mediated, and companies that have established credibility with a developer's industrial organisation before the formal supply chain solicitation process opens are systematically better positioned than those approaching the developer for the first time. METLEN's MoU with Naval Group creates exactly this kind of pre-solicitation institutional proximity.

The second level is quality system alignment. Naval Group's quality management framework for defence industrial partners, which METLEN's SES division has been operating under through the FDI frigate programme, is substantially more demanding than general industrial quality standards and is meaningfully adjacent to the ISO 19443 nuclear quality management requirements. The practical implication is that METLEN's internal quality systems, documentation processes, and supply chain management practices are already calibrated to a standard that reduces the incremental investment required to achieve formal nuclear supply chain certification. The gap between Naval Group's defence-grade quality framework and ISO 19443 is real, but it is a narrower gap than that facing a company with no defence industrial reference point.

The third level is programme intelligence. Companies that are strategic partners of an SMR developer have access to programme development information, design evolution, module interface definitions, and procurement planning timelines, that is not publicly available and that is essential for making rational investment decisions about qualification, tooling, and capacity development. METLEN, through its Naval Group partnership, is in a position to make informed decisions about which specific supply chain roles to pursue and when to initiate the qualification investments required to pursue them. This intelligence advantage is one of the primary mechanisms through which early supply chain entrants establish durable positions that later entrants find difficult to displace.

The Hellenic Industrial Participation Programme: Network Effects Beyond METLEN

The strategic significance of the Naval Group relationship for Greek industry extends substantially beyond METLEN's direct corporate footprint. More than 70 Greek companies participate in Naval Group's Hellenic Industrial Participation programme, the industrial cooperation offset framework attached to the FDI frigate procurement (93). These companies span precision manufacturing, electronics integration, steel fabrication, logistics, maintenance services, and specialised engineering, and all have been assessed, onboarded, and contracted to meet Naval Group's defence-grade quality and delivery standards. The Salamis Shipyards collaboration, examined separately in Section 3.1, is the most prominent single example within this network: by April 2025, Salamis had delivered more than ten pre-outfitted FDI hull blocks to Naval Group's Lorient facility at a completeness level of 80.4%, making it the first Greek company to deliver primary structural components to a foreign naval programme (62).

The HIP network represents something analytically important for Greek industrial policy: a pre-qualified supply base. The 70+ companies that have been assessed and approved by Naval Group to defence-grade standards are not nuclear supply chain participants, but they are companies whose quality systems, delivery performance, and technical capability have already been validated against a demanding international standard. For the purposes of nuclear supply chain development, this represents a foundation on which ISO 19443 qualification campaigns can be built more efficiently than would be possible for companies without any analogous reference point. A targeted policy intervention, identifying the subset of HIP companies whose product scope is most directly applicable to nuclear balance-of-plant or structural roles, and supporting their ISO 19443 qualification pathway, would convert an existing defence industrial network into a nascent nuclear supply chain cluster at a cost and timeline significantly lower than building such a cluster from scratch.

The Qualification Gap and the Pathway

METLEN Energy & Metals does not currently hold ISO 19443 nuclear supply chain certification or any equivalent nuclear-specific quality management accreditation. This is the definitive gap between its current industrial position and formal nuclear supply chain participation. It is a real gap, and characterising it accurately is important for the credibility of the broader argument this report advances. However, the structure of this gap is materially different from that facing a Greek company without METLEN's industrial heritage, defence industrial relationships, or Naval Group partnership.

The most direct qualification pathway for METLEN's SES division is ISO 19443 certification, achievable on a two-to-three year timeline given the existing quality management infrastructure developed through the Naval Group FDI programme. This certification would open participation in balance-of-plant EPC roles, structural fabrication, and systems integration assignments within the NuWard programme and the broader European SMR project pipeline. A second-phase objective, beyond ISO 19443, would be the pursuit of ASME NQA-1 compliance for specific manufacturing scopes and, eventually, N-stamp certification for nuclear pressure boundary components, a longer-horizon goal, ten years or more, that would represent entry into the highest-value tiers of nuclear manufacturing but requires sustained programmatic investment beyond what the current MoU relationship alone would motivate.

The most realistic near-term scenario for METLEN's nuclear supply chain entry is a targeted engagement, facilitated through the Naval Group partnership, in a specific NuWard programme delivery role, potentially in module assembly staging, systems integration for balance-of-plant mechanical systems, or EPC delivery for site civil works and infrastructure, that does not require nuclear pressure boundary qualification but does require the kind of complex industrial project management and quality-managed delivery that METLEN's SES division already provides commercially. This entry-level engagement, if successfully executed, would generate the nuclear project reference that is the most valuable single asset for subsequent supply chain tier advancement.

The Case Study's Strategic Significance

The METLEN–Naval Group case study occupies a specific and bounded place in this report's argument. It does not demonstrate that Greece is already a nuclear supply chain participant. It demonstrates that Greece's largest industrial company has a signed strategic partnership with a co-developer of Europe's most advanced SMR licensing programme, that this partnership is built on an active defence industrial relationship involving 70+ Greek companies, and that the qualification investment required to convert this strategic proximity into formal nuclear supply chain participation is, relative to the scale of the opportunity, modest. In the framework of NEA supply chain readiness assessment, METLEN represents documented industrial track record in directly adjacent disciplines, an institutional relationship with a programme developer, and a quality system foundation calibrated to a standard close to nuclear-grade, the combination that constitutes the minimum threshold from which a credible nuclear qualification programme can be launched. That threshold has been reached. What remains is the decision to cross it.

3.13 Summary Assessment

Greece's industrial capabilities relevant to the SMR supply chain can be characterised across four tiers. The first tier comprises capabilities that are immediately applicable to non-nuclear SMR supply chain participation without certification investment: civil engineering and large-scale construction project delivery, logistics and maritime infrastructure, balance-of-plant electrical systems, and non-nuclear-grade piping and structural steelwork. The second tier comprises capabilities that are applicable with targeted certification investment within a three-to-five-year horizon: Corinth Pipeworks' precision pipe manufacturing for primary and secondary circuit systems, Hellenic Cables' high-specification cable manufacturing for balance-of-plant and potentially safety-system applications, and shipyard fabrication capability for module structural assemblies. The three partnerships, examined in Sections 3.1.10, 3.1.11, and 3.1.12, represent the most advanced positions currently occupied by Greek industrial actors within this second tier, demonstrating signed, institutional relationships with defence and SMR-adjacent developers that provide the commercial and quality system foundation from which nuclear supply chain qualification can be most efficiently pursued. The third tier comprises capabilities that require a longer-term institutional development programme, ten years or more, before contributing to nuclear-specific roles: regulatory science and safety analysis staffing, operational nuclear workforce, and reactor-level engineering. The fourth tier represents a structural gap that Greece cannot close domestically and must address through technology partnership: heavy forging capability for reactor pressure vessels and steam generators, which requires capital-intensive specialised infrastructure that only a small number of facilities worldwide possess.

This tiered assessment points to a clear strategic implication. Greece's most credible near-term supply chain contribution is in the first and second tiers, civil works, non-nuclear systems, and precision industrial manufacturing moving toward nuclear certification. A government commitment to a domestic SMR programme would provide the demand signal that makes second-tier certification investment rational for Greek industrial companies. Without that signal, the investment is speculative. With it, the industrial logic is straightforward: Corinth Pipeworks, Hellenic Cables, and the revived Greek shipyards are the kind of established, internationally capable industrial organisations that the European SMR supply chain is actively seeking to recruit. Greece's geographic position in Southeast Europe makes their integration into multinational supply chains structurally attractive for any vendor seeking to build European manufacturing depth. The ONEX, METLEN, and Skaramgkas partnerships provide the most immediate evidence that this logic is not merely theoretical: both companies have established institutional relationships with international defence and nuclear-adjacent industrial groups that place them closer to nuclear supply chain entry than any comparable company in the Southeast European peer group.

Chapter 4. Greece's Strategic Positioning in the SMR Supply Chain

4.1 Comparative Positioning: Greece vs Regional Peers

4.1.1 Framework and Methodology

Assessing Greece's position in the emerging European SMR supply chain requires more than a review of its own capabilities and constraints. It demands a structured comparison against the countries competing for the same regional supply chain roles, the same vendor partnerships, and in some cases the same deployment site designations. The five countries examined in this section, Romania, Poland, Bulgaria, Türkiye, and Greece, share a broadly similar Southeast and Central European geography, comparable energy transition pressures, and overlapping ambitions in the nuclear sector. They also occupy very different positions on the path toward supply chain readiness, separated by decades of accumulated nuclear experience in some cases and by the strategic decisions taken, or not taken, in the critical period between 2018 and 2026.

The benchmarking framework applied here assesses each country across eight dimensions that collectively determine supply chain readiness: nuclear heritage and operating experience; regulatory framework maturity; government strategic commitment; vendor engagement and partnership depth; supply chain industrial base; workforce and academic capacity; financing and institutional infrastructure; and EU policy alignment. These eight dimensions draw on the NEA SMR Dashboard's framework for assessing enabling conditions across licensing, siting, financing, supply chain, engagement, and fuel readiness, extended here to incorporate the country-specific variables most relevant to regional supply chain positioning (94). Each dimension is assessed on a four-point scale: Established (a mature, operational capability with a demonstrable track record), Developing (a capability under active construction with identifiable milestones and institutional support), Nascent (an early-stage or signaled commitment without operational infrastructure), and Absent (no identified activity or commitment). This scale is deliberately qualitative rather than quantitative, reflecting the fact that the relevant variables, regulatory credibility, vendor trust, workforce depth, resist precise quantification but can be assessed with reasonable confidence from publicly available evidence.

4.1.2 Country Profiles

<u>Romania</u>

Romania enters the comparison as the most advantaged country in the peer group by a significant margin. Its operational nuclear heritage at Cernavodă, two CANDU-6 reactors providing approximately 19% of national electricity generation, in continuous operation for more than 26 years, provides the regulatory track record, qualified workforce, and supply chain reference base that all other countries in this group lack (95). The Romanian nuclear regulator CNCAN is internationally respected and has accumulated decades of licensing and inspection experience that no peer country in this group can match. Romania's strategic commitment to SMR deployment is now the most concretely advanced in the EU. Following the Final Investment Decision for the Doicești NuScale VOYGR-6 project taken by Nuclearelectrica shareholders in February 2026, the first such decision for an SMR project in the European Union, Romania has moved from analysis into implementation (49). The pre-EPC phase, expected to last approximately 15 months, will define supply chains for materials and equipment and finalise contractual structures for long-lead items. The project is expected to create approximately 200 permanent jobs, 1,500 construction jobs, and 2,300 manufacturing and component assembly jobs over the facility's 60-year operational life. US Export-Import Bank financing of $98 million has been committed to support pre-project services, and

Romania's inclusion in the SPRING initiative further cements it’s positioning as the preferred US SMR deployment gateway in Southeast Europe (96).

Romania's supply chain industrial base combines Cernavodă heritage, more than 50 years of nuclear industry experience concentrated in the ROMATOM member companies, with new SMR-specific partnerships contracted through the FEED process, including Fluor Corporation, Samsung C&T, and Studsvik Scandpower (50). The Doicești project is explicitly sited on a former coal plant, creating the just transition narrative that simultaneously generates political support and anchors workforce transition from lignite to nuclear, a model with direct relevance for Western Macedonia.

Poland

Poland's position in the peer group is defined by the tension between a strong industrial base and a significant qualification gap. Its strategic commitment to nuclear power is the most politically durable in the EU after France: the Baker McKenzie Nuclear Energy Readiness Index assessment of early 2025 found political readiness scoring 9 out of 10, with broad cross-party consensus that nuclear is necessary (43). The decision to build three AP1000 units at Lubiatowo-Kopalino, with Westinghouse technology and Bechtel construction management under the delivery of state vehicle PEJ, establishes a programme of sufficient scale to generate genuine supply chain demand. The challenge is that Poland's nuclear programme is simultaneously its first and its largest industrial project. There is no accumulated regulatory experience, no existing nuclear workforce at scale, and no domestic supply chain that has previously delivered nuclear-grade components to a licensed facility. The Baker McKenzie assessment found technology readiness at 3 out of 10 and investment and systemic readiness at 4 out of 10, precisely the dimensions that supply chain participation depends upon. The IGEOS Nuclear data point is important here: Polish companies have supplied components and services to 44 nuclear plant projects in 26 countries, but they have done so as international sub-suppliers, not as participants in a domestic nuclear programme with full local regulatory oversight. That distinction matters enormously for qualification purposes.

Poland's SMR dimension adds complexity. The KGHM Polska Miedź partnership with NuScale and SPRING programme participation place Poland in the same US SMR ecosystem as Romania, creating a competitive dynamic within what the US government frames as a single regional deployment initiative. The government's 40% local content target for Choczewo sets a concrete supply chain ambition, but achieving it will require the kind of deliberate qualification investment that the Baker McKenzie report found was not yet underway at sufficient scale.

Bulgaria

Bulgaria is the strongest nuclear heritage country in the regional peer group after Romania, and the most underappreciated one in terms of supply chain positioning. Two VVER-1000 reactors at Kozloduy have operated since 1987 and 1991, providing approximately one-third of Bulgaria's electricity, and the country's nuclear regulatory body, the Nuclear Regulatory Agency (NRA), has decades of licensing and oversight experience (97). This operating heritage gives Bulgaria a workforce, a regulatory culture, and a supplier relationship base that none of the other non-Romanian countries in this group possesses.

Bulgaria's strategic nuclear expansion is also the most active in the immediate peer group. Following parliamentary ratification of an agreement with the United States in March 2024, construction of two Westinghouse AP1000 units at Kozloduy (Units 7 and 8) is advancing toward a Final Investment Decision expected in the second half of 2026. The December 2025 signature of an owner's engineer contract with a Canadian consortium, Laurentis Energy Partners, BWXT Canada, and Canadian Nuclear Partners, valued at hundreds of millions of euros and spanning up to ten years, establishes the project management and engineering oversight framework for the full construction programme (98). The contract explicitly anticipates at least 30% Bulgarian specialist and engineering content. Hyundai Engineering and Construction has been selected as the sole shortlisted constructor following a competitive tender process. Bulgaria's SMR engagement runs in parallel. Bulgarian Energy Holding signed a Memorandum of Understanding with Fluor in November 2021 to examine coal plant replacement with NuScale reactors, and a separate MoU between NuScale and Kozloduy NPP was signed in February 2021. In December 2024 the US Trade and Development Agency signed a grant with BEH for a detailed technical analysis of US-sourced SMR design options (97). More recently, Blue Bird Energy, a Bulgarian SMR-focused company, signed a letter of intent for BWRX-300 deployment, and a Bulgaria-France declaration of intent for both large reactor and SMR collaboration was signed in February 2024. Bulgaria's SMR pathway is therefore pluralist and exploratory rather than committed to a single technology, a contrast with Romania's NuScale-anchored strategy that leaves Bulgaria with optionality but also without Romania's first-mover advantage.

The supply chain dimension of Kozloduy Units 7 and 8 creates an immediate opportunity for Bulgarian industrial companies to develop nuclear-grade qualifications on a domestic programme, exactly the dynamic that Romania's Cernavodă operators exploited over three decades. The critical question is whether the pace of qualification investment matches the project timeline, given that the FID is expected in the second half of 2026 and construction mobilisation would follow relatively quickly thereafter.

Türkiye

Türkiye's position in this comparison is structurally distinct from the other four countries: it is the only one in the group that has already delivered a nuclear power plant to operating status, regardless of the BOO model under which Akkuyu was financed and constructed. The 56% local content rate achieved on Akkuyu means that Turkish companies have qualified to nuclear-grade standards, built a reference base, and delivered components and services on an operational nuclear project, a level of demonstrated supply chain capability that none of the other peer countries has reached (45). The institutional shift represented by the creation of TÜNAŞ in 2022 transforms Türkiye's nuclear ambition from dependency on a foreign BOO operator into a state-led multi-vendor programme in which international partners enter as suppliers and collaborators rather than owners. The targets, 20 GW of nuclear capacity by 2050 including 5 GW of SMRs, supported by a domestic SMR design programme and a Nuclear Technopark, represent an ambition of a categorically different scale than any of the other countries in this group. Ongoing discussions with Rolls-Royce SMR and Westinghouse for SMR deployment, alongside US Export-Import Bank readiness to finance Turkish SMR projects, confirm that Western vendors regard Türkiye as a serious near-term market.

From Greece's perspective, Türkiye's supply chain position is both instructive and competitive. The two countries share a broadly similar maritime and engineering industrial heritage from their pre-nuclear periods, yet Türkiye is now a decade ahead in nuclear industrial development, has a workforce with demonstrated nuclear-grade qualification, and is actively developing indigenous design capability. In the specific context of regional SMR supply chain competition, Türkiye's cost base, its geographic position, and its government's willingness to enforce local content requirements create a competitive pressure point that Greek industry will need to address explicitly. The critical structural asymmetry, however, runs in Greece's favour for the specific procurement pipelines that matter most in the 2028–2033 window: Greek companies are eligible participants under EU single market procurement rules for Romanian, Bulgarian, Czech, and Polish SMR projects; Turkish companies are not, regardless of their industrial depth or cost competitiveness.

Türkiye's supply chain depth is now quantitatively distinct from that of any other Southeast European comparator. The Akkuyu programme has generated over $11 billion in domestic economic activity and qualified more than 400 Turkish companies in nuclear-grade manufacturing, civil construction, and engineering services (46). The competitive procurement structure of the Sinop and Thrace projects, which embeds technology transfer and localisation requirements into vendor selection terms, is designed to extend this capability base through successive project cycles. The March 2025 announcement of a nuclear technopark and a domestic SMR development programme signals that Türkiye's nuclear industrial ambition now extends to technology development and export, not merely programme participation. For benchmarking purposes, Türkiye should be assessed not only on its current position but on the trajectory that position implies: a country systematically converting buyer-phase experience into independent industrial and, eventually, export capability.

Greece

Greece enters this comparison from the most constrained starting position of the five countries assessed. There is no operational nuclear infrastructure, no nuclear regulator, no nuclear-grade qualified domestic supplier, no workforce with relevant experience, and no utility or state entity with nuclear project development capability. Prime Minister Mitsotakis' statement at the second Nuclear Energy Summit in Paris in March 2026, that Greece is "turning the page" on nuclear energy and will establish a committee to assess SMR feasibility, represents the first formal government signal of nuclear consideration, not a policy commitment or a programme decision (99). Greece's participation in the European Nuclear Alliance is similarly a signalling gesture rather than an operational engagement.

Against this institutional deficit, Greece possesses genuine industrial strengths that are directly relevant to nuclear supply chain participation, even if they have not yet been directed toward it. As documented in Sections 3.1.11 and 3.1.12, METLEN's strategic MoU with Naval Group, a NuWard co-developer, and ONEX's DFC-backed partnership with Hanwha Ocean place Greece's two most strategically relevant industrial actors in signed, institutional relationships with defence and nuclear-adjacent groups whose supply chain networks are directly relevant to SMR deployment. The more than 70 Greek companies integrated into Naval Group's Hellenic Industrial Participation programme represent a broader qualified industrial network operating at defence-grade standards adjacent to nuclear qualification requirements. Greece's maritime sector provides deep competence in heavy steel fabrication, complex system integration, and marine engineering, all of which transfer to nuclear supply chain Tiers 4 and 5.

What Greece lacks is the institutional framework that would allow these industrial strengths to be directed toward nuclear supply chain participation: the regulatory body, the strategic nuclear entity, the qualification pathways, the vendor relationships, and the government policy signal that would give Greek industry the confidence to invest in nuclear-grade certification. The committee announced by the Prime Minister in March 2026 is a beginning, not a programme.

4.1.3 Benchmarking Table

The following table summarises the comparative assessment across the eight supply chain readiness dimensions. Assessments reflect the state of each country as of April 2026, drawing on the sources cited throughout this section.

Scale:

Established: operational capability with demonstrable track record
Developing: capability under active construction with identifiable milestones
Nascent: early-stage or signaled commitment without operational infrastructure
Absent: no identified activity or commitment.

SMR SUPPLY CHAIN READINESS BENCHMARK — REGIONAL COMPARISON (2026)

Assessment across key dimensions of SMR ecosystem maturity

ESTABLISHED Strong maturity and track record
DEVELOPING Active progress with gaps
NASCENT Early stage activity
ABSENT No meaningful activity

DIMENSION	ROMANIA	POLAND	BULGARIA	TÜRKİYE	GREECE — STRATEGIC POSITION —
Nuclear Heritage & Operating Experience	ESTABLISHED 26+ yrs CANDU at Cernavodă	ABSENT No nuclear plants; sub-supply only	ESTABLISHED 35+ yrs VVER-1000 at Kozloduy	ESTABLISHED Akkuyu Unit 1 operational; 56% local content	ABSENT No nuclear infrastructure
Regulatory Framework Maturity	ESTABLISHED CNCAN internationally respected	DEVELOPING Framework under construction; no licensed facility	ESTABLISHED NRA with long oversight history; AP1000 transition	DEVELOPING NDK established; adapting to multi-vendor model	ABSENT No regulator; committee announced March 2026
Government Strategic Commitment	ESTABLISHED FID Feb 2026; active delivery of Doicești & CANDU 3&4	ESTABLISHED PEP2040 targets; PEJ funded; cross-party consensus	ESTABLISHED Kozloduy Units 7&8 strategic project; FID H2 2026	ESTABLISHED 20 GW by 2050 target; TÜNAŞ created	NASCENT Feasibility committee announced; no policy decision
Vendor Engagement & Partnership Depth	ESTABLISHED NuScale FID; Fluor; Samsung C&T; SPRING; US EXIM $98M	DEVELOPING NuScale/KGHM; Westinghouse/Bechtel AP1000; SPRING	DEVELOPING NuScale MoU; BEH/Fluor MoU; BWRX-300 LoI; Westinghouse AP1000	DEVELOPING Rolls-Royce & Westinghouse SMR discussions; US EXIM readiness	NASCENT METLEN/Naval Group MoU (NuWard adjacent); no SMR vendor engagement
Supply Chain Industrial Base	ESTABLISHED ROMATOM members; 50+ yrs nuclear supply history	DEVELOPING IGEOS data: 44 projects in 26 countries as sub-suppliers	ESTABLISHED Kozloduy supply chain qualified for VVER; AP1000 transition	ESTABLISHED Nuclear-grade qualified companies; 56% local content	NASCENT Industrial strengths not yet directed to nuclear qualification
Workforce & Academic Capacity	DEVELOPING Nuclear programs; Cernavodă workforce; SMR skills emerging	DEVELOPING Engineering universities; export-qualified specialists; skills gap	DEVELOPING Operational workforce; technical universities; AP1000 skills in progress	DEVELOPING Akkuyu workforce; SMR design program; Nuclear Technopark	ABSENT No nuclear programs; no qualified nuclear workforce
Financing & Institutional Infrastructure	DEVELOPING Nuclearelectrica; US EXIM committed; financing under dev.	DEVELOPING PEJ state vehicle; ~$49Bn program cost; EU taxonomy access	DEVELOPING BEH state vehicle; Citi partnership; FID financing model	ESTABLISHED TÜNAŞ state vehicle; BOO precedent; multi-source financing	ABSENT No state nuclear vehicle; no financing framework; no capital structure
EU Policy Alignment	ESTABLISHED EU taxonomy; SPRING; EU SMR Strategy; NZIA beneficiary	ESTABLISHED EU member; taxonomy; SPRING; NZIA; SMR Alliance member	ESTABLISHED EU member; taxonomy; NZIA; active in EU nuclear frameworks	DEVELOPING NATO ally; limited EU alignment; US frameworks	NASCENT EU member; NZIA; European Nuclear Aliiance signalled; no SMR submission
TOTAL SCORE (Max 24)	22 / 24	16 / 24	21 / 24	20 / 24	4 / 24

INSIGHT: SMR leadership in Southeast Europe is driven by legacy nuclear ecosystems (Romania, Bulgaria), while Türkiye demonstrates rapid capability-building through delivery models. Greece remains a pre-programme system, with its most viable entry point in targeted integration into the European SMR supply chain.

Source: Public information, company disclosures, regulator announcements (April 2026)

IMPLICATIONS FOR GREECE

No nuclear baseline

No regulator, licensed infrastructure, qualified nuclear workforce, or financing structure.

Strong adjacent capabilities

- Maritime sector
- Heavy industry & fabrication
- EPC experience

Strategic entry point

- Component manufacturing
- Balance-of-plant systems
- Regional EPC integration

GREECE CAPABILITY SIGNAL

Industrial Potential — Medium–High

Nuclear Readiness — Very Low

Greece's most viable path to value is integration into the global SMR supply chain, leveraging industrial strengths rather than full programme development.

Table 2: SMR Supply Chain Readiness Benchmarking: Regional Peer Comparison (April 2026)

4.1.4 Synthesis: Greece's Competitive Position

The benchmarking table reveals a clear gradient of readiness across the five countries, with Romania and Bulgaria leading on nuclear heritage and regulatory maturity, Poland and Türkiye leading on strategic programme scale and industrial demonstrated capability, and Greece starting from a position that is more constrained than any of the peer countries across most dimensions.

Three structural observations follow from this comparison. Greece is the only country in the peer group with no nuclear heritage of any kind. Romania and Bulgaria have operated reactors for decades. Poland and Türkiye have neither, but both have accumulated supply chain experience through international nuclear export projects or domestic construction under a BOO model. Greece has not. This is a gap in institutional credibility that affects how vendors, regulators, and financing institutions assess the country's ability to participate in a nuclear programme. Closing this gap requires deliberate institutional investment over a period of years, not months.

Greece's genuine industrial strengths are in the supply chain tiers where entry barriers are lowest and competition is most intense. The maritime, heavy fabrication, and EPC capabilities that Greece can bring to bear are most directly applicable to Tiers 4 and 5, civil works, balance of plant, logistics, and services, which are also the tiers that every other country in this group can access, and which generate the lowest margins per unit of effort. The higher-value Tier 2 and Tier 3 opportunities, in structural nuclear components, secondary circuit systems, and certified instrumentation, require qualification investment and time that Greece has not yet begun. The METLEN-Naval Group partnership is the single most significant bridging asset in Greece's current position, providing a direct connection to the NuWard supply chain ecosystem through a co-developer relationship, but it is a connection that must be actively converted into nuclear-specific qualifications and contracted supply scope to generate durable supply chain positioning.

The competitive picture that emerges is demanding but not foreclosing. The SMR supply chain is being built now, and the window for new entrant qualification remains open. Romania's head start is real but not permanent, it creates a compressed timeline, not an impassable barrier. What Greece requires is precisely the combination of institutional investment, targeted industrial qualification, and strategic vendor engagement that its peer countries began several years ago. The following sections of this chapter examine each of those dimensions in the Greek context, drawing on the comparative lessons identified here to define a realistic and actionable positioning strategy.

4.2 Greece's Competitive Advantages

Six structural advantages distinguish Greece's position from that of its regional peers in the SMR supply chain competition. Each is grounded in documented agreements, live institutional relationships, or measurable infrastructure assets. Taken together, they constitute a credible, differentiated case for Greek supply chain participation, one that is stronger than the country's institutional starting point might suggest.

4.2.1 EU Membership with Full Euratom Access

Greece is a founding member of the Euratom Treaty framework and has been an EU member state since 1981, giving it unrestricted access to the full suite of instruments that the EU SMR Strategy of March 2026 has made available to participating nations. This includes the European Industrial Alliance on SMRs, the InvestEU nuclear window, the Innovation Fund's SMR deployment calls, the IPCEI mechanism for nuclear technology, and the regulatory sandbox provisions of the Net-Zero Industry Act, instruments valued collectively at several hundred million euros in near-term commitments, with the Commission proposing a specific additional €200 million InvestEU top-up through 2028 (6).

EU membership carries a supply chain advantage that is more immediate and commercially concrete than financing access alone, and it is one that no peer country outside the EU can replicate. For the specific SMR procurement pipelines that represent Greece's most accessible near-term opportunities, Romania's Doicești NuScale VOYGR-6 project, Bulgaria's Kozloduy Units 7 and 8 programme, and the Czech Republic's Dukovany expansion, EU membership is not a soft differentiator. It is a hard procurement eligibility filter.

A Greek company competing for a supply contract on any of these projects operates under the EU single market framework: no customs duties, no rules-of-origin complications, no TARIC classification barriers, and full eligibility for IPCEI-designated and InvestEU-backed contract structures that are legally restricted to EU-domiciled suppliers. A Turkish company competing for the same contract faces a structurally different procurement environment: customs procedures under the EU-Turkey Customs Union that explicitly exclude public procurement, rules-of-origin requirements that can disqualify components with non-EU content above defined thresholds, and categorical exclusion from IPCEI and InvestEU-backed contract structures by definition. For SMR projects financed partly through EU instruments, which, given the EU SMR Strategy's financing architecture, will describe most European deployment projects through the 2030s, Turkish supply chain participation faces institutional barriers that Greek participation does not.

This distinction should not be framed as a Greek competitive advantage over Türkiye in general terms, Türkiye's industrial depth, nuclear heritage, and cost base represent genuine competitive strengths that this report addresses directly in Sections 2.5.3 and 4.1.2. The relevant point is specific and structural: for the EU-based SMR project pipeline, single market membership is a procurement eligibility condition, not a preference. Greek companies are inside that eligibility boundary. Turkish companies are not. In the context of a nuclear supply chain that will be substantially shaped by EU financing instruments and EU procurement rules, this is the primary and irreplaceable differentiator.

Romania and Bulgaria also hold EU membership and Euratom access. The critical differentiator is institutional engagement capacity. Romania's Nuclearelectrica participates directly in the European Industrial Alliance on SMRs through its ownership stake in the NuScale Doicești programme. Bulgaria's NRA and Bulgarian Energy Holding have signed USTDA grant agreements and bilateral cooperation declarations with the European Commission. Greece, as of the drafting of this report, has not yet acceded to the proposed EU SMR Coalition outlined in Action 8 of the Strategy, nor have Greek industrial actors formally registered as participants in the Alliance's supply chain working groups.

This gap is, however, asymmetric in an important respect. Greece's institutional engagement deficit is a political choice that can be reversed rapidly and at low cost: accession to the EU SMR Coalition requires no regulatory infrastructure, no industrial qualification, and no programme commitment. It requires a government decision. Meanwhile, Greece's institutional capacity to absorb and deploy EU support through its established ministries, its active engagement with EU Structural Funds, and its track record of implementing complex EU-funded infrastructure and energy programmes under ESPA and the Cohesion Fund, is meaningfully stronger than that of Bulgaria or Romania at comparable points in their EU engagement trajectories. Greece's Euratom membership also entitles it to participate in the Euratom Research and Training Work Programme 2026–2027, which funds nuclear safety research, waste management, and advanced fuel cycle studies, and through which NCSR Demokritos has historically secured research funding. Activating this access more deliberately, in alignment with the supply chain agenda rather than purely in the basic science domain, would convert a dormant asset into an operational one.

4.2.2 Maritime Infrastructure: Piraeus, Elefsina, and Syros

The EU SMR Strategy is explicit that developing modular manufacturing for SMRs "should be inspired by other industrial domains such as shipbuilding or passenger aircraft manufacturing" [COM(2026) 117, p.6]. This is a description of the industrial model that makes SMR cost reduction achievable. Factory-manufactured modules must move from production facilities to final assembly sites, often across national borders and over significant distances. The logistics architecture that enables this movement is as critical to the SMR supply chain as the manufacturing process itself.

Greece's maritime infrastructure represents a competitive advantage in this logistics dimension that is unique in the Southeast European regional peer group, and arguably unmatched in the wider EU. The Port of Piraeus, already the largest port in the Mediterranean and the third busiest container port in Europe by throughput, has existing capacity for out-of-gauge and heavy-lift cargo movements of the kind that SMR module logistics will require (100). The port's deep-water berths, rail connections to the Greek national network, and established logistics coordination with Northern European industrial hubs make it a natural staging point for components arriving from or departing to Atlantic and Baltic manufacturing facilities.

The Elefsina shipyard, operated by ONEX Shipyards and Technologies and backed by a USD 125 million loan from the US International Development Finance Corporation (DFC), is being developed not merely as a ship repair facility but explicitly as a dual-use strategic maritime and energy hub (77).

The DFC's direct investment in Elefsina is a concrete expression of US strategic interest in the facility's long-term development, an alignment that sits naturally alongside the US government's simultaneous investment in SMR deployment through the FIRST programme and the Ex-Im Bank's financing of the Romanian NuScale project. A heavy fabrication and module staging capability at Elefsina, co-located with an established port and backed by US development finance, is the closest analogue to a purpose-built SMR logistics hub that any country in Southeast Europe currently possesses.

The Neorion Shipyard on the island of Syros adds a distributed maritime fabrication network that has no regional equivalent. Neorion and Elefsina together have repaired more than 500 vessels since ONEX took over in 2019. Syros in particular, given its Cycladic geographic position, could serve as a transshipment and precision fabrication node for components destined for island-based or Eastern Mediterranean SMR deployments, a logistics function that no other peer country in this comparison can offer.

No other country in the Southeast European peer group, not Romania, not Bulgaria, not Poland, has comparable port infrastructure, deep-water heavy-lift handling capacity, and a strategically invested maritime fabrication complex in a single national footprint. Turkey has Tuzla and Izmit, but its positioning relative to Western European SMR supply chains is more geographically distant and geopolitically distinct. The maritime logistics advantage is, in this comparison, specifically and genuinely Greek.

4.2.3 Engineering Heritage: The METLEN–Naval Group and ONEX–Hanwha

The most common objection to Greece's SMR supply chain candidacy is that its industrial potential remains theoretical: capable companies, plausible sectors, but no demonstrated nuclear-grade delivery. The counter-evidence is specific, contractual, and recent.

The evidence for this counter-argument is established in detail in Sections 3.1.10 and 3.1.12. METLEN's strategic MoU with Naval Group places Greece's largest industrial conglomerate within the industrial ecosystem of the most advanced multi-jurisdictional European SMR licensing process. The 70+ Greek companies qualified through Naval Group's Hellenic

Industrial Participation programme represent a supply chain network that has already met defence-grade standards structurally adjacent to ISO 19443 nuclear quality management requirements. ONEX Shipyards, operating the Elefsina facility with a USD 125 million US Development Finance Corporation loan and a cooperation framework with Hanwha Ocean, presents a deep-water heavy fabrication asset with US strategic endorsement and South Korean industrial partnership at a facility whose physical configuration maps directly onto SMR module staging and maritime export logistics.

These are signed, executing agreements that demonstrate Greece's capacity to participate in complex, demanding, multinational industrial programmes at the quality level that defence and nuclear supply chains require. In the language of the NEA's supply chain readiness framework, they constitute demonstrable industrial track records, the minimum evidential threshold that vendors require before considering a new country as a potential supply chain entrant.

4.2.4 Geographic Position: Greece as the Southeast European Hub

Greece occupies a geographic position in Southeast Europe that has no structural equivalent among regional peers. It sits at the convergence of five distinct geographic and geopolitical zones: Western Europe, the Balkans, Turkey, the Eastern Mediterranean, and the broader Middle East. Its Aegean coastline faces the potential SMR markets of Turkey and the Eastern Mediterranean. Its northern borders connect it to Bulgaria, North Macedonia, and Albania, countries that are either pursuing nuclear programmes or are candidates for future SMR deployment as EU accession progresses. Its Ionian coast and port infrastructure link it to the Adriatic and Western European maritime networks. This geographic centrality has concrete supply chain implications.

The EU SMR Strategy explicitly identifies SMR Valleys as geographic industrial clusters capable of serving multiple deployment sites within a region [COM(2026) 117, p.8]. A Greek SMR Valley, most plausibly anchored in the Piraeus-Elefsina corridor as analysed in Section 5, would be within economic logistics distance of SMR projects in Romania, Bulgaria, and potentially Turkey, should the latter formalise SMR procurement arrangements with Western vendors. Greece's established role as a maritime logistics hub, through Piraeus and its satellite ports, means that component flows originating in France, the United Kingdom, or South Korea and destined for Southeast European deployment sites would naturally route through Greek infrastructure. The regional hub argument is strengthened by the Eastern Mediterranean energy context. The EU SMR Strategy identifies Action 9, cooperation with partner countries planning to deploy SMRs in the Southern neighbourhood, as a specific strategic objective [COM(2026) 117, p.13]. Greece is the EU's Southern neighbourhood gateway in this architecture: it borders Turkey, is adjacent to Cyprus (an EU member), and has established energy cooperation frameworks with Israel, Egypt, and the Eastern Mediterranean countries assembled under the East Med Gas Forum. An SMR supply chain capacity anchored in Greece would be well-positioned to serve not only the immediate regional EU market but the broader Southern neighbourhood deployment wave that the EU Strategy explicitly anticipates.
No other country in the Southeast European peer group combines this geographic position with EU membership, Euratom access, and existing maritime logistics infrastructure. Romania's geography is oriented toward Central Europe and the Black Sea; Bulgaria's toward Central Europe and Turkey. Greece alone sits at the intersection of the Adriatic, the Aegean, and the Eastern Mediterranean, combining EU legal access with Southern neighbourhood proximity.

4.2.5 The US Strategic Relationship

Greece's relationship with the United States has evolved over the 2020s from a traditional NATO ally relationship into a deep strategic energy and infrastructure partnership that is

directly relevant to SMR supply chain positioning. Three specific elements of this relationship constitute competitive advantages over every other country in the Southeast European peer group.
The first is the US International Development Finance Corporation's direct investment in the Elefsina facility. The USD 125 million DFC loan to ONEX Shipyards, a strategic infrastructure, reflect an explicit US government assessment of geopolitical value. DFC has a mandate to promote US national security interests alongside development goals, and its commitment to Elefsina signals that the US government regards the facility as strategically significant, a signal that aligns precisely with the US Export-Import Bank's simultaneous investment in the Romanian NuScale project and the broader US strategy of building allied SMR deployment capacity in Europe through the FIRST programme.

The second is the Alexandroupolis LNG terminal, the Floating Storage and Regasification Unit (FSRU) that entered commercial operation in October 2024 and is receiving predominantly US LNG. Alexandroupolis has been explicitly endorsed by successive US administrations as a strategic energy security asset for Southeast Europe and a component of the "Vertical Corridor" through which US LNG reaches the Western Balkans (101). The level of US political investment in this infrastructure, including personal endorsements by senior State Department officials, establishes a pattern of US-Greece strategic energy cooperation that creates natural institutional familiarity for a FIRST programme conversation.

The third is NATO alignment depth. Greece has been a NATO member since 1952 and currently hosts the NATO Maritime Command at Northwood's southeastern coordination functions, the Larissa Air Base, and the Souda Bay naval facility in Crete, one of the most strategically significant NATO assets in the Eastern Mediterranean. This depth of alliance integration, combined with Greece's consistent role in burden-sharing and force posture within the alliance, places it in a structurally different relationship with Washington than any other country in the Southeast European peer group with nuclear ambitions. Bulgaria, Romania, and Turkey are all NATO members, but none combines the full range of bilateral investment relationships, energy infrastructure partnerships, and defence procurement depth that characterises the US-Greece strategic relationship of the 2020s.

The US FIRST programme, the State Department's Foundational Infrastructure for Responsible use of SMR Technology initiative, has as of the time of writing not been formally activated for Greece. This represents, paradoxically, an opportunity rather than a deficit. Romania's FIRST engagement was the decisive factor in securing its status as the first European NuScale deployment site. Greece's US relationship is, by almost any measure, deeper and more strategically integrated than Romania's was at the point of the 2019 NuScale-Nuclearelectrica MoU.

The institutional groundwork for a FIRST conversation with Greece already exists; what it requires is the political act of initiating it, through the US Embassy Athens Economic Section or through the State Department's Bureau of Energy Resources (102), both of which have active engagement on Greek energy issues.

4.2.6 Strategic Spillover Effects

Greece's competitive advantages in the SMR supply chain are frequently assessed in isolation, as sectoral capabilities that map onto specific supply chain tiers. This framing, while analytically useful, understates the strategic value of nuclear industrial engagement. The more significant argument is systemic: entry into the SMR supply chain does not merely generate revenue in a single sector. It catalyses a cascade of capability upgrades, institutional relationships, and economic spillovers across adjacent industries that collectively transform Greece's industrial and geopolitical position. This is the logic that motivates government investment in nuclear ecosystems, not just in reactors. It is also the logic that makes Greece's

SMR opportunity structurally different from a conventional infrastructure procurement decision.

Defence Industry and Dual-Use Manufacturing

The overlap between nuclear supply chain requirements and advanced defence manufacturing is well-documented and strategically significant. Nuclear-grade fabrication demands the same precision engineering tolerances, quality assurance frameworks, and materials traceability systems that underpin the production of naval vessels, submarine pressure hulls, and aerospace structures. Greece is already demonstrating this convergence in practice. METLEN's MoU with Naval Group places a Greek industrial anchor directly at the intersection of defence and nuclear manufacturing (92).

The Hellenic Industrial Participation programme, through which over seventy Greek companies are already integrated into Naval Group's supply chain, provides the organisational infrastructure through which nuclear-grade qualification can be layered onto existing defence manufacturing relationships. The implication for Greek defence industrial policy is direct: investment in nuclear supply chain qualification is simultaneously an investment in the depth and resilience of the domestic defence industrial base, with the ISO 19443 and N-Stamp pathway representing a quality escalation that strengthens Greek companies' competitiveness across both sectors (103).

Advanced Manufacturing and Industrial Modernisation

Nuclear supply chain entry has historically functioned as a forcing mechanism for industrial modernisation. The qualification requirements imposed by nuclear-grade standards, traceability, non-conformance management, calibrated measurement systems, document control, are demanding precisely because they are designed to eliminate the process variability that is tolerable in conventional manufacturing but unacceptable in safety-critical applications.

Countries that have invested in nuclear supply chain qualification, including South Korea in the 1980s, the UAE in the 2010s, and Poland more recently, have consistently reported broader manufacturing quality improvements that extend well beyond the nuclear sector (104). For Greece, whose manufacturing sector faces structural competitiveness challenges relative to northern European peers, the discipline imposed by nuclear qualification represents an industrial upgrading mechanism with economy-wide implications. The companies that achieve ISO 19443 certification to serve the Cernavodă Unit 3 project or the Bulgarian SMR programme at Kozloduy will be demonstrably more competitive across the precision engineering, petrochemical, and energy sectors as a result.

Hydrogen and the Industrial Energy Nexus

The relationship between SMR technology and green and low-carbon hydrogen production is receiving growing attention in EU energy policy, and its implications for Greece are strategically significant. SMRs operating in cogeneration mode can provide the sustained, high-temperature process heat and stable baseload electricity that large-scale electrolysis requires, at costs and load factors that intermittent renewables cannot match (105). Greece has positioned itself as a future hydrogen exporter under its National Hydrogen Strategy, with ambitions centred on renewable hydrogen production and export via the Southern Gas Corridor and planned interconnectors to Central Europe (106). SMR-enabled hydrogen, whether produced domestically or as part of a regional production cluster, extends this export proposition beyond the weather-dependent constraints of purely renewable hydrogen, providing dispatchable production capacity aligned with the baseload demand profiles of European industrial consumers. The infrastructure investments that SMR supply chain participation requires, port upgrades, grid reinforcement, industrial zone development, are directly compatible with the hydrogen logistics infrastructure that Greece's export ambitions require, creating an investment co-benefit that strengthens the case for both programmes simultaneously.

Maritime Decarbonisation

Prime Minister Mitsotakis explicitly referenced maritime decarbonisation in his Paris statement of 10 March 2026, and the connection is more than rhetorical (7). Greece controls the world's largest shipping fleet by deadweight tonnage, and the sector faces an accelerating regulatory transition driven by the IMO's revised greenhouse gas strategy, which targets net-zero emissions from international shipping by or around 2050 (107). Nuclear propulsion for commercial vessels, a technology that was operationally proven in military applications decades ago and is now being revisited for large commercial vessels by multiple development programmes, requires the same component manufacturing, quality assurance, and maintenance infrastructure as land-based SMR deployment. A Greek industrial base that has qualified for SMR supply chain participation is, by definition, better positioned to service nuclear-propelled commercial vessels than one that has not. This creates a long-term strategic alignment between Greece's SMR supply chain investment and its core economic interest as a maritime nation: the companies that develop nuclear-grade fabrication and inspection capabilities today are building the infrastructure for what may become a significant maritime nuclear services market in the 2030s and 2040s.

Export Competitiveness and Supply Chain Diplomacy

Nuclear supply chain capability, once established, is exportable. The South Korean experience is instructive: KEPCO's international project wins, in the UAE, and in ongoing tender competitions across Europe and Asia, are built on a domestic industrial base that was systematically developed through decades of nuclear programme investment (104). Greece will not replicate South Korea's vertically integrated nuclear industrial structure, nor should it attempt to. But the more targeted model, a specialist supply chain contributor with recognised expertise in specific tiers, precision fabrication, inspection services, marine engineering, and logistics, is both achievable and commercially scalable. Greek companies that achieve nuclear-grade qualification serving the Southeast European cluster will be positioned to pursue supply chain contracts in the United Kingdom, France, Poland, and beyond, converting regional entry into a platform for broader European and international market access. This export logic transforms the SMR supply chain investment from a regionally bounded opportunity into a foundation for long-term industrial export competitiveness in a sector with multi-decade demand visibility.

Energy Diplomacy and Geopolitical Positioning

The final and perhaps most strategically durable spillover is geopolitical. Energy relationships in Southeast Europe are in active transition, driven by the imperative to reduce Russian energy dependency and the emergence of new supply corridors and technology partnerships. Greece has already leveraged its LNG infrastructure and Alexandroupolis terminal to establish itself as a regional energy security actor (108). Nuclear supply chain engagement extends this positioning into a new dimension: countries that develop nuclear industrial relationships with American and French technology vendors, through the FIRST programme, the Naval Group partnership, or Westinghouse supply chain engagement, acquire political and institutional connections that transcend the commercial transaction. The US-Greece strategic energy relationship, manifested in the DFC loan to ONEX is an expression of strategic alignment in which nuclear cooperation functions as an instrument of foreign policy (109). For Greece, whose geographic position at the intersection of European, Eastern Mediterranean, and Middle Eastern strategic interests gives it unusual diplomatic leverage relative to its economic scale, nuclear supply chain development is simultaneously an industrial policy choice and a foreign policy asset. Governments that invest in nuclear ecosystems understand this duality, and so should Greece.

4.3 Gaps and Challenges

4.3.1 Framing: Honest Assessment

Any report that presents only Greece's advantages in the SMR supply chain without a rigorous accounting of its gaps and challenges would fail its primary purpose: to provide policymakers, investors, and industrial partners with an accurate picture of where Greece stands and what it must do to translate structural opportunity into operational participation. The three challenges addressed in this section are not disqualifying obstacles. Each has a documented pathway to resolution. However, each is also real, time-sensitive, and likely to be underestimated by those motivated by the considerable genuine opportunity that Greece's position presents. The honest assessment that follows is offered in that spirit.

4.3.2 Challenge 1: The Absence of Operational Experience

Greece has never operated a commercial nuclear power plant. This represents an absence of the accumulated operational knowledge, safety culture, and human capital pipeline that underpins every credible nuclear programme. Countries that have successfully launched new nuclear programmes, South Korea, the UAE, Finland, did so from foundations that included either existing reactor operating experience, deep bilateral partnerships with established nuclear nations, or both. The IAEA Milestones Approach, the globally recognised framework for newcomer nuclear states, organises the infrastructure required before a country can responsibly host a commercial reactor into three phases covering nineteen distinct areas, including national nuclear policy, safeguards, safety and regulatory frameworks, radiation protection, spent fuel management, and human resource development.

The direct mitigation pathway for this gap is the US Department of State's FIRST programme, the Foundational Infrastructure for Responsible Use of SMR Technology, which provides capacity-building support, including regulatory assistance, safety frameworks, workforce training, study tours to operating plants, and project preparation tools, specifically to countries that are newcomers to civilian nuclear energy or are seeking to expand their programmes with SMRs (110). The FIRST programme currently partners with more than 50 countries across five continents and, critically, its SPRING sub-initiative, the SMR Pan-Regional Interest Nuclear Group launched in Warsaw in September 2025, focuses specifically on European countries pursuing fleet-scale SMR deployment (111). Greece is not yet a FIRST partner country. Given the strength of the US-Greece bilateral relationship, the DFC's investment in Elefsis shipyards, and the ONEX-Hanwha agreement signed at the US Department of Transportation in February 2026 in the presence of both countries' senior officials, seeking FIRST programme engagement should be among the first concrete steps that Greece's ministerial evaluation committee recommends. FIRST engagement costs nothing to initiate, carries no deployment commitment, and provides structured access to the full range of US nuclear expertise that a newcomer programme require.

4.3.3 Challenge 2: The Nuclear-Grade Certification Gap

As established in Section 3.1, no Greek industrial company currently holds ISO 19443 nuclear quality management certification or the ASME N-stamp equivalent. This is the single most specific and actionable supply chain gap identified in this report, and it is important to characterise it accurately, both its significance and its tractability.

ISO 19443 is the internationally recognised quality management standard specifically for organisations in the nuclear energy sector supply chain supplying products and services important to nuclear safety (ITNS). It builds on ISO 9001 with approximately 200 nuclear-specific additional requirements covering nuclear safety culture, risk-based thinking, determination of ITNS items, material traceability, verification, and counterfeit/fraudulent/suspect item prevention (79). The certification cycle formally takes three years and begins with the initial certification audit, followed by surveillance audits in the second and third years (112). However, the clock on the three-year audit cycle does not begin until an organisation has implemented a compliant quality management system, which itself requires a preparatory investment of twelve to twenty-four months for an organisation without prior nuclear QA experience, covering gap analysis, system design and documentation, personnel training, and internal auditing (113). The realistic minimum timeline from the decision to pursue ISO 19443 certification to holding a valid certificate is therefore two to three years for an organisation that already operates a mature ISO 9001 system, and three to five years for one approaching the process with a less developed quality management baseline.

The commercial stakes of this gap are immediate. The first European SMR projects, the Doicești NuScale deployment in Romania and the Darlington BWRX-300 in Canada, are already in construction or advanced construction planning phases. Their procurement timelines for civil and component supply are running now. A Greek company that begins the ISO 19443 certification process in 2026 can realistically complete it in 2028 to 2029, positioning itself to participate in the second wave of European SMR construction, projects likely commencing in the early 2030s under the EU SMR Strategy's target of first European units operational by the early 2030s (6). This requires industrial companies to begin the qualification investment before a domestic Greek programme provides the demand signal that would make it obviously rational.

The appropriate policy response is a targeted national programme, potentially funded through ERDF and Cohesion Fund allocations under the 2021-2027 Multiannual Financial Framework tranches or IPCEI mechanisms under the EU SMR Strategy, to support the certification costs of identified Greek industrial candidates, specifically Corinth Pipeworks, Hellenic Cables, and one or more shipyard or heavy fabrication operators. The certification investment per company, covering consultancy, system development, training, and audit costs, is modest relative to the supply chain contract values that certification would unlock. The barrier is the absence of a policy framework that makes the investment rational before the domestic demand signal exists.

One dimension of the certification gap requires specific acknowledgement because it is not resolved by ISO 19443 certification alone. For components and services designated as Important to Nuclear Safety, vendor qualification processes require not only documented quality management compliance but confirmation that the supplying organisation operates under a nuclear regulatory framework with established supplier surveillance authority. Greece currently has no domestic supplier oversight programme of this kind within EEAE's operational mandate. This means that ISO 19443 certification, while the essential and most immediate qualification step, is a necessary but not sufficient condition for Greek companies seeking ITNS-scope roles. Section 6.3.6 of this report proposes a regulatory bridging mechanism, a bilateral arrangement between EEAE and an experienced EU nuclear regulator, as the interim instrument for closing this gap while EEAE's own supplier oversight capability is developed.

4.3.4 Challenge 3: Nuclear Workforce Does Not Yet Exist

Greece does not currently have the engineering pipeline required to staff a nuclear programme. This is a structural gap that, unlike certification, it requires sustained institutional commitment measured in years and engaging universities, research institutions, regulators, and industry simultaneously. The dimensions of the gap are specific. A nuclear power programme requires, at minimum: nuclear engineers capable of reactor physics analysis, thermal-hydraulics modelling, and safety analysis; radiation protection specialists qualified to power reactor standards; nuclear instrumentation and control engineers; regulatory safety reviewers capable of conducting independent design assessments; quality assurance specialists trained in nuclear QA frameworks; and licensed reactor operators and shift supervisors. None of these roles currently exists in Greece in nuclear-qualified form. NCSR Demokritos's Institute of Nuclear and Radiological Sciences provides a research-oriented foundation, and its engagement with the current nuclear policy debate, including the 2nd Nuclear Energy Conference in Athens in November 2025, is a positive institutional signal, but its staffing, research focus, and resource base are calibrated to a research reactor context, not the demands of a power reactor programme. Greece's CERN participation provides advanced physics training across multiple universities but is oriented toward particle physics rather than the reactor engineering, safety analysis, and operational disciplines that a nuclear programme requires.

The mitigation pathway is multi-track and requires simultaneous action. At the university level, Greece should establish dedicated nuclear engineering or nuclear energy technology programmes, or nuclear specialisation tracks within existing mechanical, electrical, and chemical engineering curricula, at the National Technical University of Athens, Aristotle University of Thessaloniki, and the University of Patras, where the relevant faculty and laboratory infrastructure are most developed. At the research level, NCSR Demokritos should be resourced to expand its nuclear engineering capability beyond the research reactor context, potentially through structured programmes with the French CEA, which has indicated willingness to support partner countries' nuclear capacity-building under bilateral frameworks. At the regulatory level, the EEAE needs a dedicated workforce development plan, covering international secondments to experienced nuclear regulators, training programmes at the IAEA's International Nuclear Management Academy, and structured mentoring partnerships with the CNSC, ONR, or ASNR, that runs in parallel with and is resourced at the same level as the institutional legal framework development. These steps must begin simultaneously, because the human resource development timeline of five to eight years is the longest lead item in Greece's nuclear readiness programme.

4.3.5 Summary Assessment

The five challenges addressed in this section share a common characteristic: each has a documented, internationally validated mitigation pathway, and each requires action to begin now, before the political and commercial conditions that make the action rational are fully in place. The FIRST programme pathway for operational experience is available but requires Greece to formally seek engagement. The ISO 19443 certification pathway for industrial companies is technically straightforward but requires a policy framework to make the investment rational ahead of a domestic demand signal. The workforce development pathway is well understood from international precedent but requires immediate institutional commitment to begin the decade-long pipeline. The seismic engagement pathway requires transparent, site-specific, probabilistic analysis, not rhetoric, communicated through a structured public consultation process that must begin before the next election. And the EEAE development pathway requires legislative action and bilateral regulatory support that must be initiated within the current parliamentary term if Greece is to have a credible regulatory basis for any programme decision in the 2030s.

None of these challenges diminishes the genuine structural advantages identified in Section 4.2. What they establish is the precondition for those advantages to translate into operational supply chain participation and, ultimately, into a credible domestic nuclear programme: the work must start now.

4.4 Southeast Europe as a Regional Hub Opportunity

4.4.1 A Cluster Argument That Precedes Domestic Deployment

The case for Greece's involvement in the global SMR supply chain does not depend on Greece deciding to build a reactor of its own. The preceding sections have established that argument on its own merits. But there is a second, reinforcing strategic logic that deserves explicit treatment: Greece is geographically, industrially, and institutionally positioned to serve as the primary logistics, fabrication, and services hub for a regional cluster of nuclear programmes that is, taken together, among the most active in Europe. Within a 1,500-kilometre radius of Piraeus, several of Greece's neighbours are engaged in live nuclear investment programmes, programmes that will require significant quantities of heavy components, specialist maritime logistics, qualified inspection and maintenance services, skilled workforce supply, and regulatory support over the next two decades. Greece need not be a nuclear operator to capture a substantial portion of that value. It needs only to recognise and act upon the structural advantage that its geography and its existing industrial assets confer. This section maps the regional demand landscape and articulates why the hub argument is, in near-term commercial and political terms, more powerful than the domestic deployment argument as a primary strategic narrative for Greece in the period to 2030.

4.4.2 Mapping the Regional Demand

Romania

Romania is the single most consequential nuclear investment market in Southeast Europe, and it is generating demand on two simultaneous tracks. The first is the refurbishment of Unit 1 at Cernavodă, Romania's only operating nuclear power plant, a CANDU-6 reactor that entered commercial operation in 1996 and whose designed lifetime expires in 2027. In December 2024, Nuclearelectrica signed a €3.5 billion engineering, procurement, and construction contract with a consortium led by Korea Hydro and Nuclear Power, alongside Candu Energy and Ansaldo Nucleare, to refurbish Unit 1 and extend its operating life by a further 30 years to 2060. Civil construction works began in September 2025. A state aid request was filed with the European Commission in January 2026 (114), and major refurbishment works are scheduled to run from 2027 to 2029. Unit 2 is expected to undergo equivalent refurbishment around 2037 (95).

The second track is the Doiceşti SMR project, in which the joint venture RoPower Nuclear, established by Nuclearelectrica and Nova Power and Gas, is deploying NuScale's VOYGR-6 technology: six 77 MWe modules for a total installed capacity of 462 MWe at the site of a former coal-fired power plant approximately 90 kilometres northwest of Bucharest. In February 2026, Nuclearelectrica shareholders approved a final investment decision for the project, making it the most advanced SMR programme in Europe (49). The first module is targeted for commercial operation in 2033, with the full six-module plant operational by the mid-2030s. Fluor Corporation serves as the engineering, procurement, and construction partner, with NuScale as a subcontractor, and the project has benefited from US Export-Import Bank financing and US Trade and Development Agency grant support (115). In parallel, Romania is also advancing the construction of Units 3 and 4 at Cernavodă, with expected commercial operation in 2030 and 2031 respectively, each producing approximately 700 MWe. Romania's Nuclearelectrica has approved a total strategic investment portfolio of €20 billion over the next decade, representing the most concentrated programme of nuclear capital expenditure in Southeast Europe by a substantial margin (116) (96).

The supply chain implications of this programme are substantial. The Cernavodă refurbishment alone involves the replacement of critical reactor components, fuel channels, calandria tubes, feeders, and reactor building structures, many of which are large, heavy, and require specialist maritime logistics for delivery. The Doiceşti SMR project requires the prefabrication and transport of modular reactor components, a logistics task whose maritime dimension is precisely the domain in which Greek ports and heavy-lift operators have established international capability. Romania has also signalled its intention to localise a portion of supply chain work, creating direct opportunities for qualified regional partners. Greece has not formally positioned itself as a logistics and fabrication partner for the Romanian programme. That position remains available.

Bulgaria

Bulgaria's nuclear programme is the second most active in the region. The country operates two VVER-1000 reactors at its Kozloduy site, Units 5 and 6, with a combined net capacity of 2,006 MWe, generating approximately one-third of Bulgaria's electricity. Sofia has approved the addition of two further units at Kozloduy, designated Units 7 and 8, using Westinghouse's AP1000 pressurised water reactor technology, which would, if completed, become the first AP1000 units deployed in Europe. The construction partner selected is South Korea's Hyundai Engineering and Construction (97). In December 2025, a contract was signed with a consortium including Laurentis Energy Partners, BWXT Canada, and Canadian Nuclear Partners for engineering support throughout the design, procurement, and construction phases (98). A final investment decision was expected in the second half of 2026, and Bulgaria's Ministry of Energy entered into a partnership with Citi in July 2025 to develop the financing framework for the project (117).

In parallel, Bulgaria has maintained a dialogue on SMR deployment. The Bulgarian state energy holding company BEH signed memoranda of understanding with NuScale in 2021 and with Fluor in the same year to explore SMR options at and beyond the Kozloduy site, and the US Trade and Development Agency has funded a detailed technical analysis of US-sourced SMR designs for Bulgaria. In February 2024, Bulgaria and France signed a declaration of intent covering both large reactor and SMR technology options (97). These parallel tracks reflect a national energy strategy that seeks to expand nuclear capacity while hedging across technology generations. The Kozloduy 7 and 8 project alone represents a multi-billion-euro construction programme with significant demand for heavy fabrication, specialist logistics, and qualified inspection services, all of which are functions that Greece's port and industrial infrastructure is positioned to supply.

Serbia

Serbia's nuclear trajectory is at an earlier stage but has accelerated significantly since late 2024. In November 2024, the Serbian National Assembly voted to overturn the country's 35-year-old Yugoslav-era moratorium on nuclear power plant construction, a prohibition enacted in 1989 in the aftermath of Chernobyl (118). This legislative change, described by Energy Minister Dubravka Đedović Handanović as a historic moment, also endorsed Serbia's energy strategy to 2040 and initiated the creation of a new Directorate for Nuclear Energy Development. Serbia has expressed a clear preference for SMR technology, with President Vučić publicly stating an ambition to acquire at least four small modular reactors to replace approximately 1,200 MWe of capacity. In March 2026, Serbia's Ministry of Mining and Energy presented a preliminary technical study, prepared in cooperation with EDF, laying out a roadmap toward a first nuclear power plant around 2040, with preparatory phases to be completed by 2032 (119). Serbia is simultaneously engaging with a range of potential technology partners including France, the United States, South Korea, and China, reflecting both the country's strategic ambivalence and the intensity of vendor interest in this emerging market.

Serbia's nuclear programme will require extensive external support, regulatory, technical, logistical, and educational, precisely because the country is building from a standing start after 35 years of institutional dormancy. This creates an early-mover opportunity for Greece as a neighbouring EU and Euratom member state with established institutional relationships and, through EEAE, a framework for bilateral regulatory cooperation. Greece's Piraeus and Thessaloniki ports represent the natural import gateway for nuclear-grade equipment destined for inland Balkan markets. If Serbia proceeds with an SMR programme in the 2030s, the overland logistics corridor from a Greek Aegean port through Northern Greece and the Axios Valley into the Western Balkans will be among the most commercially rational routes for heavy component delivery.

Albania and North Macedonia

Albania and North Macedonia do not currently have active nuclear programmes, and neither country is at a stage where SMR deployment can be characterised as a near-term prospect. They are, however, relevant to the regional hub argument in two distinct ways. First, both countries face acute energy transition pressures that are generating demand for reliable, low-carbon baseload power that their current energy systems cannot supply domestically. North Macedonia remains heavily dependent on ageing coal-fired generation, the Bitola and Oslomej thermal plants, with combined coal capacity of over 800 MW, are outdated, unreliable, and scheduled for phase-out under the country's EU integration commitments. A fire at Bitola in June 2025 that took multiple units offline is emblematic of the structural fragility of North Macedonia's electricity supply (120). The country has adopted a new Energy Law in 2025 aligned with EU energy legislation, and its national energy strategy explicitly includes SMRs as a longer-term option for electricity capacity, with the Ministry of Energy having entered early discussions with both the United States and the United Kingdom on SMR technology options (121).

Albania, by contrast, has no coal-fired generation and generates the overwhelming majority of its electricity from hydropower, making it structurally vulnerable to drought years (122). Its energy transition challenge is one of diversification rather than decarbonisation, and the country has made significant strides in renewable energy development and regional interconnection. Both Albania and North Macedonia currently import fuel and energy products primarily through Greece, and both are deeply integrated into the Southern Gas Corridor and the regional electricity market through interconnections with the Greek grid. This existing commercial and infrastructure relationship makes Greece the natural service hub for any future nuclear supply chain activity in these markets as a consequence of existing trade and logistics flows. A 2026 LNG agreement signed between ALBGAZ and a US supplier, routed through Greek LNG infrastructure, illustrates precisely this pattern of Greek market intermediation for Albanian energy needs (123).

Second, in a regional nuclear ecosystem in which Romania and Bulgaria are building capacity and Serbia is developing a programme, the countries without nuclear capability will become importers of nuclear electricity through the regional interconnected grid. A 2025 analysis by the Pupin Institute noted that US energy diplomat Geoffrey Pyatt, speaking in Washington in October 2025, explicitly linked the progress of Romanian and Bulgarian nuclear projects to the energy security interests of Serbia and its neighbours, arguing that regional interconnection would allow nuclear baseload to reduce dependence on Russian gas across the wider Balkans (124). As that nuclear electricity flows across regional grids, the countries generating it will require services, maintenance, and specialist personnel, functions that a Greek nuclear services hub could supply to the entire cluster.

4.4.3 Greece as the Natural Hub for the Southeast European Cluster

The case for Greece as the logistics, fabrication, and services hub for the Southeast European nuclear cluster rests on four structural factors that the preceding analysis has established and that, taken together, are not replicated by any other country in the region.

The first is maritime infrastructure and deep-water port access. Heavy nuclear components, reactor pressure vessels, steam generators, large turbine assemblies, are typically too large and heavy for road transport and must arrive by sea. Piraeus is one of the largest container ports in Europe and has existing capacity for heavy-lift operations. Elefsina, the subject of a $125 million US Development Finance Corporation investment and a partnership with Hanwha Heavy Industries, is being developed as a strategic maritime and energy fabrication hub with precisely the industrial infrastructure that nuclear supply chains require. Syros, with its established naval repair and heavy engineering tradition, provides an additional node. No other country in the Southeast European cluster has comparable deep-water port infrastructure with the industrial overlay required for nuclear-grade logistics. Romania's Black Sea port at Constanta is a viable alternative for some supply routes, but it lacks the naval engineering heritage and the fabrication infrastructure that characterise the Greek maritime complex.

The second is EU and Euratom membership. Greece is the only EU member state in the immediate geographic vicinity of the Southeast European nuclear cluster that does not itself have an advanced nuclear programme. This is a structural advantage, not a disadvantage. Greece can participate in Euratom supply agency frameworks, access EU industrial financing instruments for nuclear-related investment, and provide Euratom-compliant regulatory assurance to vendors and operators sourcing from Greek suppliers, services that non-EU neighbours such as Serbia and Albania cannot self-supply. As the EU SMR Strategy of March 2026 explicitly calls for the development of regional supply chain clusters and SMR Valleys, Greece's Euratom membership positions it to host EU-designated nuclear industrial infrastructure serving the wider region.

The third is existing commercial relationships with the regional nuclear actors. Greek industrial companies, most notably through METLEN's participation in the Naval Group Hellenic Industrial Participation programme and ONEX's DFC-backed relationship with Hanwha, already have established supply chain interfaces with the same defence and energy technology groups that are active in SMR development across the region. These relationships provide a commercial entry point that new entrants in other countries would take years to replicate. Thessaloniki, as Greece's northern gateway, is less than 500 kilometres overland from the Bulgarian Kozloduy site and less than 700 kilometres from Cernavodă in Romania, placing Greek logistics infrastructure within economically rational supply distance of the region's two most active nuclear projects.

The fourth is non-destructive testing and inspection capability. As Section 3.8 documents, Greece has established NDT companies with nuclear-adjacent quality systems, including SpectrumNDT, whose advanced inspection capabilities are directly applicable to nuclear-grade component verification. In a regional supply chain where qualification bottlenecks are the primary constraint on new entrant participation, Greek NDT capability represents a near-term commercial opportunity that does not require construction of new industrial facilities. Inspection and testing services can be provided across borders, and Greek-qualified NDT personnel and equipment are mobile assets that can serve the Romanian, Bulgarian, and Serbian programmes without requiring Greece to host a single nuclear component on its own territory.

The transport connectivity argument for Greece's hub positioning has been given formal EU institutional expression through the Baltic Sea – Black Sea – Aegean Sea European Transport Corridor, established by Greece, Bulgaria, and Romania with European Commission support in December 2025. The BBA Corridor formalises the north-south transport axis, Athens, Thessaloniki, Sofia, Bucharest, Constanța, that connects Greek port and fabrication infrastructure to the Romanian and Bulgarian nuclear project sites identified in Section 4.4.2, integrating road, rail, waterway, and maritime interfaces within a single TEN-T designated multimodal framework (125). Greece is committing more than €1.3 billion to the completion of its sections by 2030, financed through Cohesion Funds and the Connecting Europe Facility.

For the purposes of SMR supply chain logistics, the BBA Corridor converts the geographic proximity argument from a map observation into a formally planned, EU-funded infrastructure investment, the transport backbone on which component deliveries from Greek fabrication facilities to Southeast European construction sites can be routed with the reliability that nuclear procurement schedules require.

4.4.4 The Eastern Mediterranean Angle

The regional hub argument extends beyond Southeast Europe into the Eastern Mediterranean, where Greece already occupies a central node in a deepening web of energy and security partnerships. The Greece-Cyprus-Israel trilateral alliance, institutionalised through ten annual leaders' summits, the most recent held in Jerusalem in December 2025, has established energy cooperation as one of its three defining pillars alongside security and economic connectivity. In November 2025, the energy ministers of Greece, Cyprus, Israel, and the United States convened in Athens for the 3+1 Energy Ministerial, issuing a joint statement reaffirming their commitment to promoting energy security and cooperation in the Eastern Mediterranean through the Eastern Mediterranean Energy Center, with a further meeting planned in Washington for the second quarter of 2026 (126). Neither Cyprus nor Israel currently has an operating nuclear power plant, and neither has announced a near-term SMR deployment programme. But both face energy security challenges that make nuclear energy a rational long-term consideration. Cyprus is an isolated island electricity system with no grid connection to continental Europe, a situation that the Great Sea Interconnector (formerly EuroAsia Interconnector) project is designed to address by linking the Cypriot, Israeli, and Greek grids through a 1,208-kilometre subsea HVDC cable at a projected cost of €2.5 billion. Construction began in October 2022, and the project remains a European Union Priority Project of Common Interest, though its progress has been complicated by Turkish objections and the temporary freezing of payments to the cable manufacturer Nexans (127). If completed, the Great Sea Interconnector would position Greece as the physical electricity gateway between Israel, Cyprus, and continental Europe, a role that is directly relevant to any future nuclear energy contribution from these markets to the regional grid.

Egypt represents the most concrete near-term nuclear programme in the broader Mediterranean neighbourhood, though its primary partnership is with Rosatom, which is constructing the El Dabaa nuclear power plant on the Mediterranean coast (128). Egypt's Atomic Energy Authority has historically maintained technical relationships with Greek nuclear research institutions through IAEA frameworks, and Egypt is a participant in the East Mediterranean Gas Forum alongside Greece, Cyprus, and Israel (129). The El Dabaa project is a Russian-technology large reactor programme and is not, in the near term, a supply chain opportunity for Greek or Western industry. However, Egypt has also expressed interest in SMR technologies as a complement to the large reactor programme, and its growing electricity demand, the country needs substantial additional generation capacity before the end of the decade, makes it a natural longer-term market for SMR services. Any Egyptian SMR programme aligned with Western technology frameworks would almost certainly route its logistics through the Eastern Mediterranean, with Greek ports as the most geographically rational entry point.

4.4.5 IMEC and the Reinforcing Connectivity Architecture

The India-Middle East-Europe Economic Corridor (IMEC), announced at the G20 Summit in New Delhi in September 2023 and endorsed by the United States, the European Union, India, Saudi Arabia, the UAE, France, Germany, and Italy (130), is relevant to the regional hub argument in a way that has received insufficient analytical attention in the nuclear context. IMEC's original design envisaged a maritime and rail corridor connecting Indian ports through the Gulf to Haifa in Israel, and from Haifa by sea to Piraeus in Greece, before continuing overland to Northern Europe. This places Greece, specifically Piraeus, as the designated European entry gateway of the corridor, a role that Greek Prime Minister Mitsotakis and Israeli Prime Minister Netanyahu explicitly reaffirmed at their December 2025 summit in Jerusalem. The 10th Trilateral Summit joint declaration noted that the three leaders had agreed to advance IMEC, describing it as a combination of maritime routes, energy pipelines, and cable connectivity linking Asia and Europe via Israel, Cyprus, and Greece (131).

IMEC’s relevance to the SMR hub argument is structural rather than programmatic. The corridor is designed to move goods, energy, and data between Asia, the Gulf, and Europe, and the infrastructure investments it will catalyse, in port capacity, rail connectivity, logistics hubs, and undersea cables, are precisely the general-purpose infrastructure on which a nuclear supply chain hub would also depend. A Greece that has upgraded its port logistics capacity, its overland rail connections northward into the Balkans, and its subsea energy cable infrastructure as part of IMEC implementation is also a Greece better positioned to serve as the logistics gateway for the Southeast European nuclear cluster. The investments are complementary, and the strategic narrative is mutually reinforcing: Greece as the Southern European intersection of the world’s most ambitious new connectivity corridor is also Greece as the natural hub for the most active regional nuclear investment cluster in the EU.

The European Council on Foreign Relations has noted that IMEC overlaps significantly with the EU’s Euro-Asia Interconnector, the Great Sea Interconnector, which links the electricity grids of Greece, Cyprus, and Israel (132). If the Great Sea Interconnector is completed, it would not only end Cyprus’s electricity isolation but also provide a physical infrastructure backbone for the Eastern Mediterranean energy cooperation framework that the 3+1 ministerial dialogue is developing at the policy level. A nuclear services hub in Greece, serving both the Southeast European cluster to the north and the Eastern Mediterranean partners to the south and east, would sit at precisely the intersection of these two corridors.

4.4.6 The Hub Narrative vs Domestic Deployment

The domestic deployment argument for SMRs in Greece is legitimate. Greece faces real energy security vulnerabilities, gas import dependency, renewable curtailment, island grid fragility, that a domestic SMR programme could help address. Prime Minister Mitsotakis’ Paris declaration and the subsequent Athens agreements of April 2026 have opened the policy space for that conversation. But as a near-term strategic argument for mobilising industrial investment, international partnerships, and government action, the domestic deployment narrative carries significant liabilities that the hub narrative does not.

Domestic SMR deployment in Greece requires: a fully revised National Energy and Climate Plan; EEAE regulatory capacity development of a scale that will take at minimum five to eight years; formal site selection processes subject to seismic, environmental, and planning assessments; public acceptance campaigns in a country with no history of nuclear operation and significant legacy sensitivity; and a final investment decision from a utility with no nuclear operating experience. None of these prerequisites can be accelerated without risking credibility, and all of them require years of foundational work before a deployment decision can rationally be taken. A domestic deployment argument that overpromises on timelines will be exposed and will undermine confidence in the entire Greek nuclear engagement, at exactly the moment when that confidence needs to be built.

The hub narrative carries none of these liabilities. Positioning Greece as the logistics, fabrication, and services gateway for Southeast Europe’s nuclear cluster requires no regulatory approval for domestic deployment; it requires port investment decisions, industrial qualification programmes, bilateral commercial agreements, and government policy signals that are within the executive capacity of the current Greek government. It generates immediate economic returns, construction contracts, logistics revenues, qualification premiums, skilled employment, without waiting for a domestic nuclear programme to reach construction. It builds the industrial capability, the qualified workforce, the regulatory institutional capacity, and the international vendor relationships that would be essential preconditions for domestic deployment if and when that decision is taken. And it positions Greece credibly within the EU SMR Strategy framework without requiring Greece to commit to hosting a reactor.

There is also a sequencing logic that the international precedents reviewed in Section 2.5 validate. The UAE built its nuclear industrial capability through supply chain participation before it had an operating reactor; Poland is navigating the qualification gap precisely because it attempted to enter the supply chain before establishing its industrial readiness; Romania positioned itself as a supply chain anchor for the region by committing early and building industrial engagement around a live deployment programme. Greece's optimal entry point is to use the regional hub role, supported by Romania's, Bulgaria's, and Serbia's live programmes, to accumulate the industrial experience, qualified workforce, and vendor relationships that make a domestic deployment decision in the 2030s both technically feasible and commercially rational. The hub is the logical first chapter in any potential future Greek nuclear programme, one that begins at the supply chain tier and works upward if a deployment decision is ultimately taken.

In political terms, the hub narrative also offers a more durable cross-party consensus position than domestic deployment. The seismic concerns, the public trust deficit, and the legacy sensitivity that Section 4.3 identifies as genuine challenges to domestic deployment are not eliminated by framing Greece as a supply chain participant rather than a reactor host; but they are substantially less politically salient. Greek public opinion that is divided or resistant on the question of a reactor in Greek territory is considerably more likely to support a Greek company winning a logistics or fabrication contract for a Romanian or Bulgarian programme. And once that capability is established, and once Greek technicians are working on nuclear projects in the region, the quality of the public conversation about domestic deployment will be materially different from what it is today.The Southeast European and Eastern Mediterranean hub is not a substitute for a Greek nuclear programme. It is its prerequisite.

Chapter 5. GIS-Supported Site and Infrastructure Analysis

5.1 Purpose and Framework of the GIS Analysis

The analytical work presented in this chapter introduces a spatial dimension that text-based analysis cannot replicate. The SMR supply chain opportunity described in Chapters 3 and 4 is, at its core, a question of geography: which Greek locations have the industrial infrastructure, port access, grid connectivity, workforce proximity, and transport linkages that nuclear-grade supply chain participation requires? These are questions that can be posed in prose but can only be answered with rigour through the systematic spatial overlay of objective data layers. The GIS analysis presented in Maps 1 through 3 is designed to provide that rigour.

5.1.1 Primary Purpose: Supply Chain Infrastructure Mapping

The central analytical purpose of this chapter is to answer a specific and actionable question: where in Greece is the existing industrial and logistical infrastructure best configured to support participation in SMR supply chains serving the regional cluster identified in Section 4.2. This is an economic geography question, not a nuclear licensing question. It draws on layers describing port capacity and deep-water access, active industrial zones and shipyard infrastructure, high-voltage grid connectivity, road and rail transport networks, and the geographic distribution of relevant engineering and technical workforce.

This mapping has immediate policy and commercial utility: it provides a spatial evidence base for government decisions about where to direct industrial qualification support, for development finance institutions considering infrastructure co-investment, and for SMR vendors evaluating where to anchor regional supply chain partnerships.

5.1.2 What GIS Contributes That Text Cannot

Three capabilities justify the inclusion of original geospatial analysis in this report.

Spatial evidence

The assertion that for example, Thessaloniki is well-positioned as a northern logistics gateway for Bulgarian and Romanian programmes is more analytically credible when grounded in measured distances to Kozloduy and Cernavodă, documented port infrastructure data, and mapped rail corridor capacity than when it rests on qualitative judgement alone.

Objective overlay methodology

Rather than selecting case study locations on the basis of prior assumption, the composite suitability index weights and combines data layers systematically, allowing the analysis to surface locations whose suitability might not be immediately apparent from sectoral knowledge alone.

Visual communication for non-specialist audiences

Ministers, investment committee members, and industrial executives, the primary decision-making audience for this report, are more likely to act on a spatial argument they can see than on a textual description of the same relationships. Maps translate analytical conclusions into a form that is immediately communicable across disciplinary and linguistic boundaries.

5.1.3 Limitations

Two limitations apply to the entire GIS chapter and are acknowledged here.

Data gaps

Greek industrial zone boundaries are not uniformly digitised in open-source datasets. Heavy-lift port capacity data is incomplete for smaller ports. Substation capacity data is not publicly available. Where gaps exist, conservative assumptions have been applied. These gaps are documented by layer in Appendix A.

Static snapshot

The analysis reflects the geographic distribution of infrastructure and industrial activity as of 2025–2026. It does not forecast future investment. The analysis should be refreshed as new data becomes available.

5.1.4 How to Read the Maps That Follow

The three maps are structured to build the spatial argument progressively:

- **Maps 1-2** present individual data layers (industrial infrastructure, energy grid). These are the analytical building blocks.
-
- **Map 3** places the Greek analysis within the Southeast European and Eastern Mediterranean regional context, visualising the hub argument developed in Section 4.4.

5.2 Data Layers and Methodology

The spatial analysis was conducted using QGIS version 3.44 Solothurn. All national and detail maps were produced in EPSG:2100 (GGRS87 / Greek Grid). Base map imagery was sourced from OpenStreetMap XYZ tiles.

Three thematic data families were assembled, each corresponding to a dimension of supply chain suitability: industrial infrastructure, energy infrastructure, and transport connectivity. Table 4 summarises the layers and sources; full technical documentation including Overpass Turbo queries, symbology specifications, and processing workflows, is provided in Appendix A.

Table 4: Data Layers and Sources

Data Family	Layer	Source
Industrial infrastructure	Major ports (5)	OpenStreetMap / ELSTAT (manual digitisation)
	Shipyards (4)	OpenStreetMap / Corporate disclosures (ONEX, Naval Group)
	Industrial zones (4 polygons)	OpenStreetMap (visual digitisation from satellite imagery)
	Key industrial facilities (5)	Corporate disclosures (Corinth Pipeworks, Hellenic Cables, Sidenor)
Energy infrastructure	High-voltage transmission lines (400kV, 150kV)	OpenStreetMap (Overpass Turbo extract)

Data Family	Layer	Source
	Substations	OpenStreetMap (Overpass Turbo extract)
Transport connectivity	Major highways (motorway, trunk)	OpenStreetMap (Overpass Turbo extract)
	Rail network	OpenStreetMap (Overpass Turbo extract)
Base map	Geographic reference	OpenStreetMap XYZ tiles

5.2.1 Industrial Infrastructure

Five major ports (Piraeus, Elefsina, Thessaloniki, Volos, Alexandroupoli) and four shipyards (Elefsina, Skaramagkas, Salamis, Syros) were manually digitised from OpenStreetMap base imagery, cross-referenced with corporate and regulatory sources. Three industrial zones were delineated as polygons tracing visible manufacturing agglomerations: the Elefsina-Aspropyrgos Industrial Corridor (Athens west coast), Sindos (Thessaloniki), and Volos. Five key industrial facilities were added as point features to represent specific manufacturing capabilities with direct SMR supply chain relevance: Corinth Pipeworks (steel pipes), Hellenic Cables (Corinth and Thiva), and Sidenor (Thessaloniki and Almiros). Full facility-level detail is provided in Appendix C.

5.2.2 Energy Infrastructure

High-voltage transmission lines (400kV and 150kV) and substations were extracted from OpenStreetMap via Overpass Turbo. The transmission network was styled by voltage to illustrate grid capacity available to industrial facilities; substations were mapped as point features to identify nodes where new industrial connections could be established.

5.2.3 Transport Connectivity

Major highways (motorway and trunk roads) and the national rail network were extracted from OpenStreetMap via Overpass Turbo. These layers illustrate overland logistics routes for heavy component transport between industrial facilities, ports, and regional markets. Key corridors captured include the A1 (Athens–Thessaloniki), the A2 (Egnatia Odos), and the A8 (Athens–Corinth–Patras).

5.2.4 Cartographic Styling and Export

All maps were produced as A4 landscape print layouts. A consistent styling scheme was applied across the map set: ports as blue ship icons, shipyards as red stars, key industrial facilities as purple circles with yellow stroke, industrial zones as semi-transparent red polygons, highways as red solid lines, railways as black dashed lines, transmission lines by voltage (red for 400kV, orange for 150kV), and substations as dark orange squares.

Maps were exported as PNG images at 300 dpi. Full symbology specifications and export parameters are documented in Appendix A.

5.2.5 Limitations

Three limitations apply. First, OpenStreetMap data completeness varies by region; the analysis prioritises strategic-level assets over exhaustive inventory. Second, industrial zone polygons were manually digitised and should be understood as indicative rather than cadastral. Third, the Overpass Turbo API imposes timeout limits; queries were optimised for Greece's geographic extent. Notwithstanding these limitations, the spatial analysis provides a rigorous evidence base for assessing Greece's industrial infrastructure in the context of SMR supply chain participation.

5.3 Map 1: Industrial Infrastructure and Port Facilities

The GIS analysis presented in this section maps Greece's industrial infrastructure, port facilities, shipyards, and key manufacturing assets against the spatial logic of the SMR supply chain. Four maps are presented: Map 1 provides a national overview of industrial nodes and connectivity, while Maps 1a, 1b, and 1c present detailed views of the three principal industrial clusters identified as most immediately relevant to supply chain participation, the Skaramagkas-Elefsina corridor, the Thessaloniki industrial zone, and the Volos port and industrial zone respectively.

[Map 1: Industrial Infrastructure and Port Facilities — National View]
[Map 1a: Piraeus-Corinth Industrial Corridor — Detail]
[Map 1b: Thessaloniki Port and Sindos Industrial Zone — Detail]
[Map 1c: Volos Port and Industrial Zone — Detail]

5.3.1 Key Findings from the Infrastructure Analysis

The national overview in Map 1 reveals a pattern that is not immediately apparent from a sectoral analysis of individual companies: Greece's SMR-relevant industrial assets are not randomly distributed across the national territory. They are concentrated at three nodal clusters, the Skaramagkas-Elefsina corridor in Attica, the Thessaloniki-Sindos industrial zone in Central Macedonia, and the Volos port and industrial zone in Thessaly, each of which combines manufacturing capability with direct port access and motorway connectivity along the PATHE north-south axis. This spatial concentration is analytically significant because it means that the supply chain case for Greece rests on three discrete, well-connected industrial clusters, each with its own port and highway interface, whose collective capabilities span the principal supply chain tiers most relevant to SMR procurement.

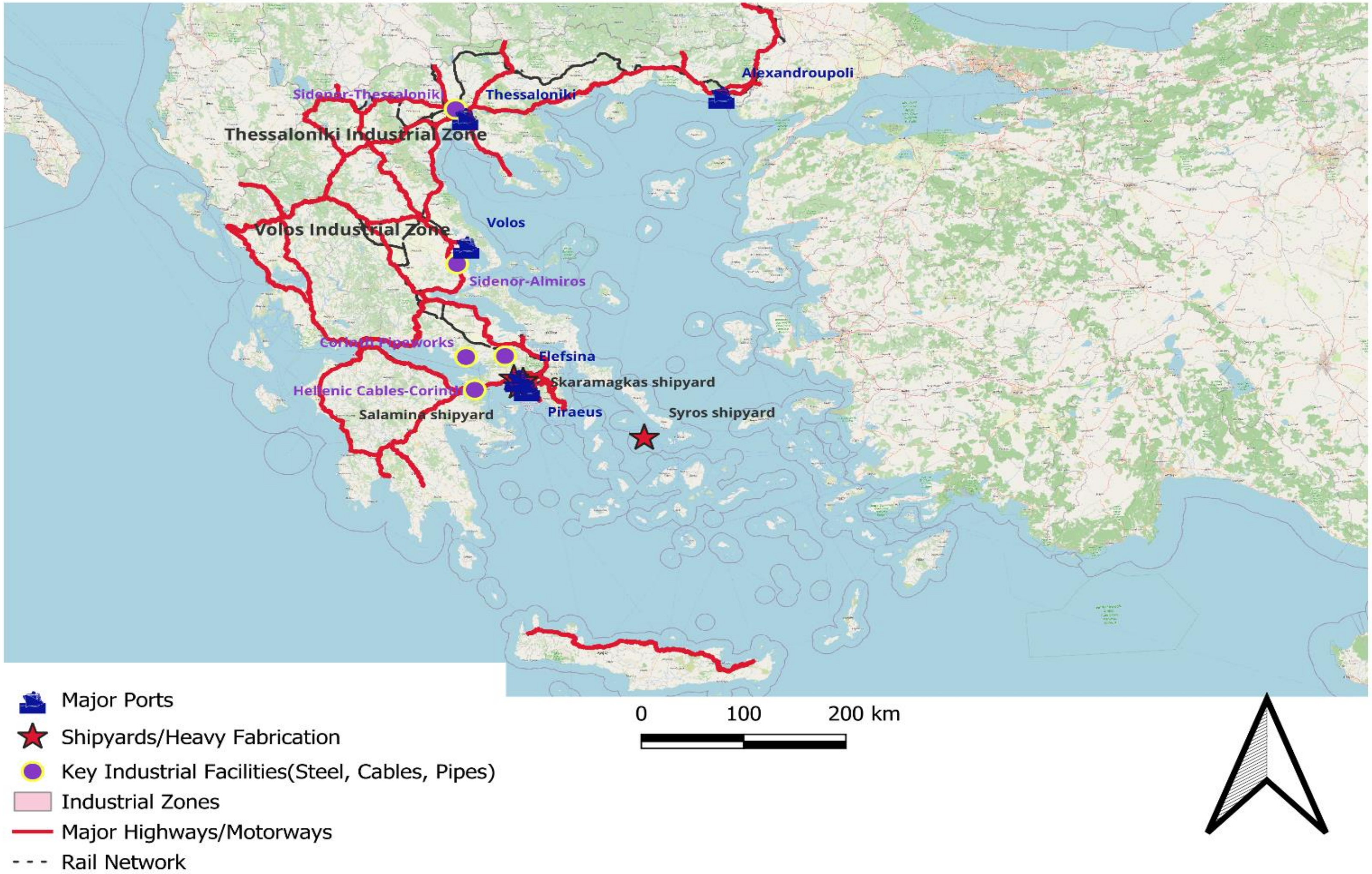
The PATHE motorway corridor, visible in Map 1 as the primary red artery connecting Athens through Corinth, Volos, Larissa, and Thessaloniki through the Egnatia highway to the Bulgarian border, is the logistical spine that connects all three clusters to each other and to the Southeast European nuclear project pipeline to the north. The significance of this connectivity is not merely domestic. The same motorway network that links the Skaramagkas-Elefsina corridor to the Thessaloniki port continues northward through the Egnatia highway, into Bulgaria and Romania, the two most active nuclear construction markets in Southeast Europe. The rail network, shown in dashed black on both the national and detail maps, reinforces this north-south axis with heavy freight capacity that is directly relevant to the movement of large-format industrial components between fabrication nodes and port export facilities.

The Skaramagkas-Elefsina industrial corridor, examined in detail in Map 1a, is the most strategically significant single cluster in the GIS analysis, and its spatial characteristics justify the SMR Valley designation argument advanced in Section 7.1 of this report. The corridor's defining feature, visible in the shaded industrial zone overlay, is the co-location of three shipyards, Elefsina, Skaramagkas, and Salamina, within a contiguous fifteen-kilometre industrial geography that connects directly to the Piraeus port complex at its eastern boundary. This shipyard concentration, unique in Southeast Europe for its combination of deep-water access, heavy fabrication capability, and proximity to a major international container and bulk cargo port, provides the maritime logistics infrastructure that SMR module manufacturing and export requires. The detail map further reveals the manufacturing cluster that surrounds the corridor: Hellenic Cables-Thiva to the north, Hellenic Cables-Corinth and Corinth Pipeworks to the west, all within motorway distance of Piraeus. The corridor is the anchor of a broader manufacturing geography that encompasses the two principal high-specification cable manufacturers and one of Europe's most technically advanced pipe and tube producers within a single logistical zone. The Project Trident investment of €1.35 billion under the ONEX-Hanwha Ocean strategic alliance, and the simultaneous MoU between Skaramagkas Shipyards and HD Hyundai Heavy Industries signed at Poseidonia 2026, are transforming this geography into a formally committed, Korean-anchored, US-backed strategic manufacturing hub whose spatial logic maps directly onto the heavy fabrication and maritime export requirements of the SMR supply chain.

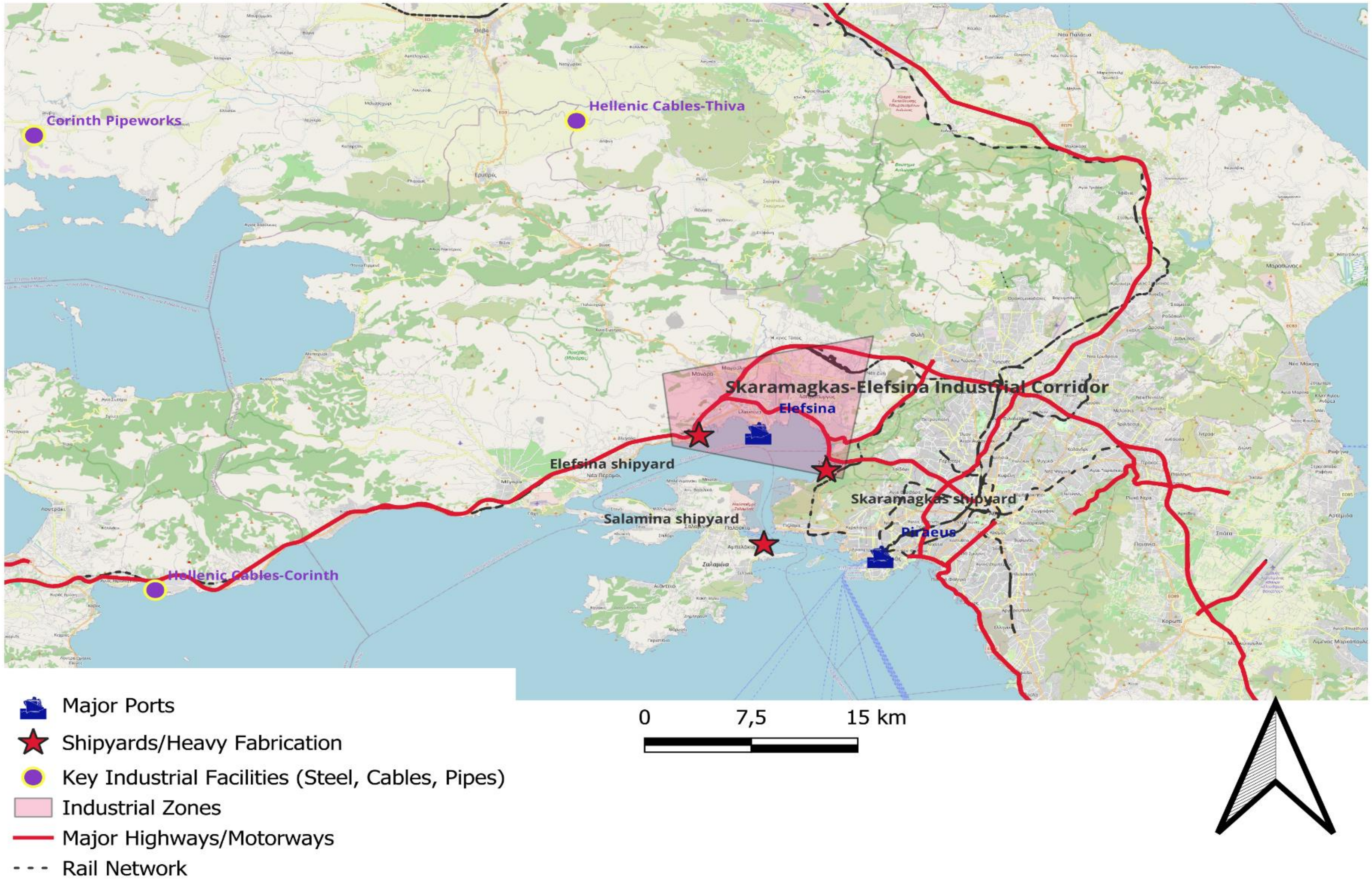
The Thessaloniki-Sindos industrial zone, detailed in Map 1b, represents Greece's second most significant cluster for supply chain purposes and the one with the strongest natural interface with the Central and Southeast European nuclear construction markets. The Sindos industrial zone to the west of Thessaloniki, the largest organised industrial zone in Greece by area, concentrates steel processing, mechanical engineering, and logistics operators within direct reach of Thessaloniki port, which handles the highest container throughput of any Greek port after Piraeus and operates regular freight services to Black Sea ports including Constanța, Varna, and Burgas. Sidenor Thessaloniki, visible in Map 1b as the principal key industrial facility marker within the zone, is the company's northern production node and the natural candidate for steel section and structural component supply to regional nuclear construction programmes. The motorway and rail connections visible in Map 1b link the Sindos zone directly to the E75 north-south corridor that continues to Sofia, Bucharest, and the Romanian nuclear project sites, a road distance of approximately 700 kilometres from Thessaloniki port to the Doicești SMR site, traversable by heavy transport within a single logistics cycle.

The Volos industrial zone, shown in Map 1c, merits particular analytical attention for a reason that goes beyond the scale of its assets: it is the location of M Technologies, METLEN's advanced metallic structures manufacturing division and its designated Defence Hub. M Technologies operates four factories in Volos with a fifth and sixth under active development, and is in the process of expanding its specialised industrial footprint from 30,000 to 100,000 square metres under a €45 million investment programme co-financed through the European Union's NextGenerationEU facility under the Greece 2.0 National Recovery and Resilience Plan. The strategic positioning of the Hub is explicitly acknowledged on METLEN's own platform: direct access to Volos port, the national rail network, the E65 motorway connection to the PATHE mainline, and Volos airport, a multimodal logistics interface that no other Greek advanced manufacturing site of comparable scale replicates in a single location. The Defence Hub designation reflects the facility's primary orientation toward high-specification metallic structures for defence applications, the same quality culture, precision fabrication standards, and supply chain discipline that nuclear-grade manufacturing requires and that the Naval Group industrial partnership, detailed in Section 3.12 of this report, has brought into direct institutional contact with METLEN's manufacturing operations. The co-location of M Technologies within the Volos industrial zone, alongside Sidenor-Almiros to the south, which remains the principal steel long products manufacturing facility in Greece, creates a cluster whose combined capabilities span structural steel production, precision advanced metallic fabrication, and defence-grade quality management within a single port-connected, multimodal logistics zone. For the purposes of the supply chain analysis, Volos is the location of METLEN's most advanced manufacturing investment, funded at EU level, anchored by a Naval Group industrial partnership, and positioned within direct reach of a port and motorway network that connects it to both the domestic corridor at Elefsina and the Southeast European nuclear construction markets to the north.

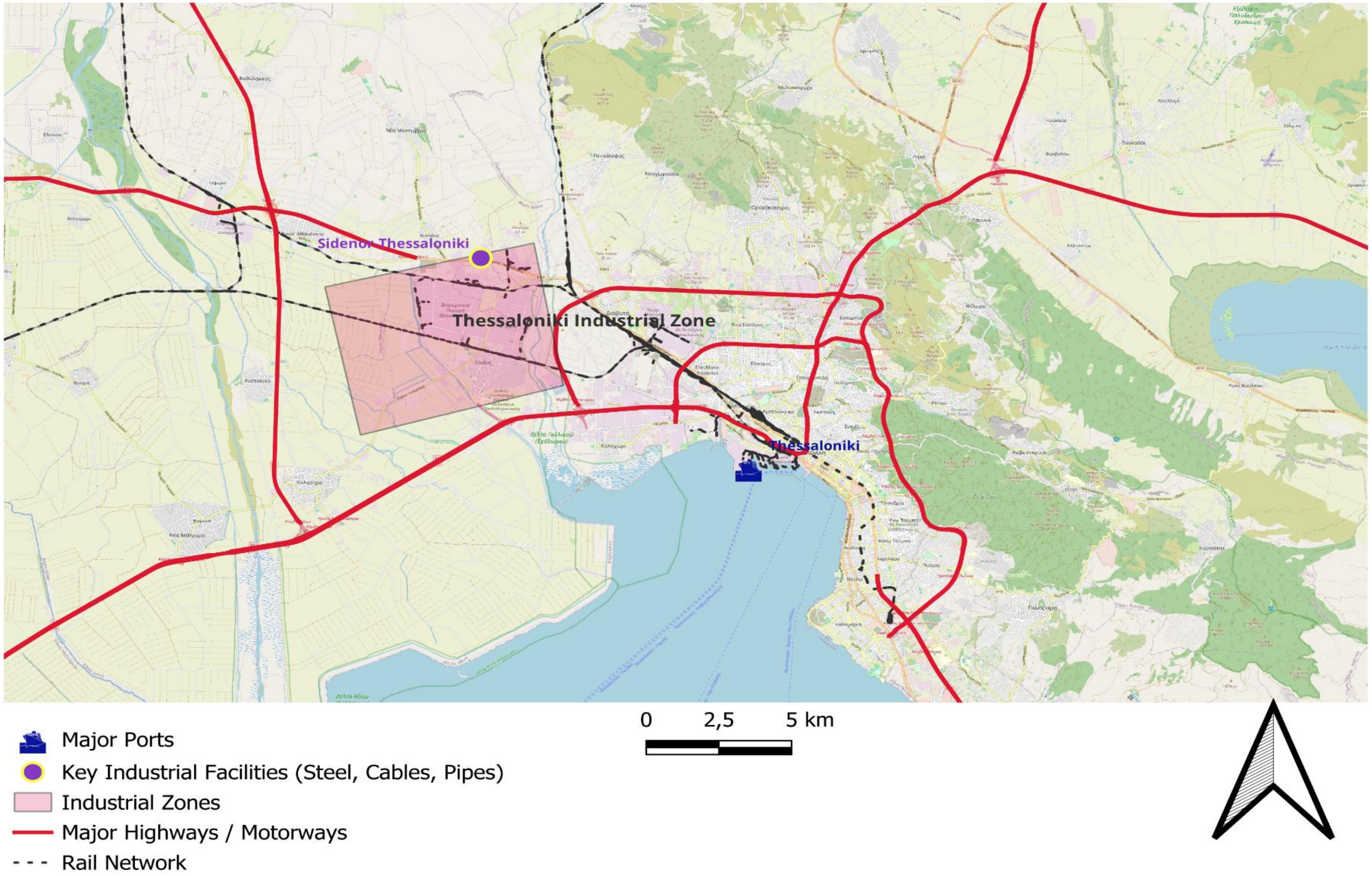
Map 1: Industrial Infrastructure and Port Facilities - National View



Map 1a: Piraeus-Corinth Industrial Corridor - Detail



Map 1b: Thessaloniki Port and Sindos Industrial Zone - Detail



Map 1c: Volos Port and Industrial Zone — Detail

5.4 Map 2: Energy Grid

The high-voltage transmission grid serving Greece's principal industrial clusters is documented in Map 2, provided in Appendix A. The 400kV backbone and 150kV sub-grid infrastructure shown in that map confirms that all three clusters identified in Section 5.3, the Skaramagkas-Elefsina corridor, the Thessaloniki-Sindos zone, and the Volos industrial zone, are served by high-capacity transmission infrastructure consistent with the power supply requirements of heavy industrial manufacturing operations. For the purposes of the supply chain analysis, grid connectivity is treated as a confirmed baseline condition rather than a differentiating variable: the relevant industrial assets in all three clusters are operational manufacturing facilities with established grid connections, and the transmission infrastructure required to support expanded nuclear-grade manufacturing activity within those facilities is already in place. A more detailed assessment of grid capacity and connection points in the context of potential domestic SMR deployment siting would constitute a distinct analytical exercise beyond the scope of this report.

5.5 Map 3: Southeast European Regional Context

The preceding sections have examined Greece's industrial infrastructure in national terms, the capabilities of specific clusters, the connectivity of individual port and manufacturing nodes, and the qualification distance between existing assets and nuclear-grade supply chain participation. This section situates that national picture within its regional context, examining Greece's geographic positioning relative to the active nuclear construction pipeline in Southeast and Central Europe that constitutes the primary demand environment for the supply chain participation argument advanced in this report.

[Map 3: Southeast European Regional Context — Greece as an SMR Supply Chain Logistics Hub]

5.5.1 Key Findings from the Regional Context Analysis

Map 3 presents the spatial relationship between Greece's three principal industrial and port nodes, the Skaramagkas-Elefsina corridor, Thessaloniki, and Volos, and the active nuclear construction and development sites in Romania and Bulgaria that represent the most immediate and commercially proximate demand destinations for Greek supply chain participation. The map reveals a geographic logic that is fundamental to the report's core argument: Greece is not at the periphery of the Southeast European nuclear cluster. It is at its southern anchor, with its port infrastructure providing the maritime gateway through which component flows in either direction, northward from Greek fabrication facilities to construction sites, or southward from European manufacturing hubs to Greek port redistribution, must pass.

The three Romanian and Bulgarian nuclear sites shown on Map 3 collectively represent the most active nuclear construction pipeline in Europe outside France and the United Kingdom. Doicești, in southern Romania, is the site of the NuScale SMR programme under RoPower Nuclear, which reached Final Investment Decision in February 2026 and is targeting first module commercial operation in 2033, the most advanced SMR new-build timeline on the European continent. Cernavodă, on the Romanian Black Sea coast, is the site of the existing two-unit CANDU fleet and the Units 3 and 4 new build programme, whose construction mobilisation represents one of the largest nuclear infrastructure investments in Southeast European history. Kozloduy, in northwest Bulgaria, hosts the existing six-unit fleet and the Units 7 and 8 new build programme, whose Final Investment Decision is expected in the second half of 2026, with construction mobilisation to follow, a procurement pipeline that will generate demand for fabricated components, civil construction materials, NDT services, and logistics support across a construction horizon extending into the mid-2030s.

The overland distance from Thessaloniki to Kozloduy, readable directly from Map 3's scale bar, is approximately 350 kilometres via the E79 motorway through Bulgaria, a single heavy transport cycle traversable within one working day. The distance from Thessaloniki to the Doicești SMR site in Romania is approximately 700 kilometres via the E75 and E85 corridors through Bulgaria and southern Romania, traversable within a standard two-day heavy haulage cycle. These distances are not trivial, but they are within the logistical parameters that major construction projects routinely manage for component supply from regional fabricators, and they are distances that Greek logistics operators, who already service Balkan markets through the same highway corridors, are operationally familiar with.

The maritime routing option, indicated by the regional port symbols on Map 3, adds a second logistics axis that overland analysis alone does not capture. Piraeus, Greece's primary maritime hub and one of the largest container ports in the Mediterranean, provides direct shipping access to the Black Sea through the Dardanelles and Bosphorus straits, reaching Constanța in Romania and the Bulgarian Black Sea ports of Varna and Burgas with transit times of approximately three to four days under normal sailing conditions. Constanța, visible on Map 3 as the largest regional port marker on the Romanian Black Sea coast, is the natural maritime entry point for oversized or heavy components destined for the Cernavodă and Doicești construction sites, both of which are within 200 kilometres of the port via Romanian national road and rail infrastructure. This maritime axis is particularly relevant for the shipyard-manufactured components, structural steel modules, pressure boundary components, secondary circuit assemblies, that represent the highest-value supply chain participation tier available to the Skaramagkas-Elefsina corridor.

Alexandroupoli, shown on Map 3 as a Greek port node in the northeast of the country, adds a third logistical dimension that the Piraeus-centred maritime analysis does not fully capture. As the closest Greek deep-water port to the Bulgarian border and the northern Aegean coast, Alexandroupoli provides an overland-maritime combined routing option for components originating in Thessaloniki or Volos that are destined for Bulgarian or Romanian construction sites: road transport from the fabrication node to Alexandroupoli, maritime transfer to Varna or Constanța, then final overland delivery to the construction site. This multi-modal routing option, already operationally established through Alexandroupoli's role as a US military logistics node under the 3+1 Energy Ministerial framework, is available to nuclear supply chain logistics without requiring new infrastructure investment.

The Baltic-Black Sea-Aegean Corridor, formally established by Greece, Bulgaria, and Romania with European Commission support in December 2025, formalises the transport axis that Map 3 illustrates spatially. The BBA Corridor integrates road, rail, waterway, and maritime interfaces within a single TEN-T designated multimodal framework, with Greece committing more than €1.3 billion to the completion of its national sections by 2030 under Cohesion Fund and Connecting Europe Facility financing. For the purposes of SMR supply chain logistics, the BBA Corridor converts the proximity argument visible in Map 3 from a geographic observation into a formally planned, EU-funded infrastructure investment, the transport backbone on which component deliveries from Greek fabrication facilities to Southeast European construction sites can be routed with the reliability and predictability that nuclear procurement schedules require.

The regional port network shown on Map 3, Giurgiu on the Danube, Varna, Burgas, and Constanța on the Black Sea, also illustrates a secondary opportunity that the overland and direct maritime routing analysis does not address: the Danube river logistics corridor. Giurgiu, visible on the map at the Romanian Danube crossing, provides access to the inland waterway network that extends westward through Serbia, Hungary, Slovakia, Austria, and Germany, the primary manufacturing heartland of European nuclear component supply. Greek port infrastructure, and Piraeus in particular, is not only a logistics origin point for Greek-fabricated components. It is a potential redistribution hub for components originating in Central European manufacturing facilities and transiting southward through the Black Sea and Aegean for delivery to Eastern Mediterranean and Middle Eastern nuclear programmes, a secondary role that the regional geography makes available and that Greek port operators are positioned to service without additional infrastructure investment.

Taken together, Map 3 and the analysis in this section establish a regional geographic logic that is the spatial foundation of the report's supply chain argument. Greece's industrial clusters are not proximate to the Southeast European nuclear construction pipeline by coincidence. They are the southern terminus of the transport and logistics corridor that connects Central and Southeast European industrial capacity to the Aegean and Eastern Mediterranean maritime network, a geographic position whose strategic value for nuclear supply chain logistics is directly proportional to the scale and pace of the construction programme that is now advancing to its north.

Map 3: Southeast European Regional Context — Greece as a Logistics Hub

Chapter 6. Policy, Regulatory, and International Programme Framework

6.1 Greece's Response Requirements Under the EU SMR Strategy

Section 2.3 of this report described the structure and content of the European Commission's SMR Strategy (COM/2026/117), adopted on 10 March 2026. The purpose of this section is different: it moves from description to prescription, identifying the specific actions that Greece must take to position itself as an active participant in the Strategy's implementation rather than a passive observer of it. Three response requirements are analysed in sequence, the Piraeus-Elefsina SMR Valley designation, accession to the SMR Coalition, and participation in the European Industrial Alliance on SMRs, followed by a fourth that is preliminary to all three: Greece's still-absent signature on the Declaration to Triple Nuclear Energy.

6.1.1 The Piraeus-Elefsina SMR Valley

Action 6 of the EU SMR Strategy calls on Member States to support the development of SMRs within designated Net-Zero Acceleration Valleys, defined in the Strategy as geographically bounded areas designed to accelerate the manufacturing of net-zero technologies and foster industrial clusters (29). The Commission is promoting the creation of SMR Valleys as regional industrial clusters designed to bring together manufacturers, developers, investors, and research institutions working on modular nuclear technologies. This designation mechanism is the most direct EU policy instrument through which Greece can formalise and fund the industrial cluster that already exists, in embryonic form, along the Piraeus-Elefsina coastal corridor.

The case for a Piraeus-Elefsina SMR Valley designation rests on a convergence of existing assets that no other candidate corridor in Southeast Europe can replicate in combination. The Elefsina shipyard, operated by ONEX Shipyards and Technologies and capitalised through a USD 125 million DFC loan, provides the heavy fabrication and deep-water port infrastructure that SMR module manufacturing requires. The Aspropyrgos and West Attica industrial zone immediately adjacent to the corridor concentrates steel fabrication, civil engineering contractors, pipeline manufacturers, and logistics operators. The motorway and port connections linking Elefsina to Piraeus create a continuous logistics spine from fabrication to maritime export, with Piraeus providing access to the Eastern Mediterranean, Aegean, and Black Sea shipping lanes that serve the Southeast European project pipeline. METLEN's industrial footprint in the broader Attica region adds the metallurgical and advanced manufacturing dimension. The proximity of the National Technical University of Athens and the University of Piraeus provides the skilled workforce and research partnership infrastructure that Valley designation requires. No single asset in this list is unique; the combination of all of them in a contiguous, port-anchored industrial geography is. The announcement of Project Trident on 29 May 2026, a €1.35 billion tripartite Greece-USA-South Korea strategic alliance investment in the Elefsina shipbuilding and industrial ecosystem, formalised at the US Ambassador's residence in Athens, materially strengthens this case. The SMR Valley designation proposal for the Skaramagkas-Elefsina corridor now rests not on the potential of existing assets alone, but on a formally committed, diplomatically endorsed industrial transformation programme of a scale and institutional credibility that no other candidate corridor in Southeast Europe can match. The Valley designation, in this context, is the natural institutional recognition of an industrial ecosystem that three governments have already decided to build.

Independent assessment from nuclear EPC construction practice provides direct practitioner validation of the Elefsina corridor's fabrication viability for nuclear-grade module manufacturing. The two physical variables most critical to nuclear fabrication, crane capacity and available working space, are present in a shipyard configuration at a scale that dedicated nuclear manufacturing facilities rarely match. The qualification cost of adapting an existing heavy fabrication shipyard for nuclear manufacturing is assessed as minimal relative to the capital already invested, given that the structural and mechanical infrastructure nuclear fabrication requires is substantially in place. One specific technical requirement warrants explicit acknowledgement: reactor vessels and steam generators require controlled clean environments during fabrication, a condition that open shipyard bays do not inherently provide. The practical solution, a dedicated enclosure within the existing facility footprint, is a modest and well-precedented capital investment that does not materially alter the economic case for qualification, and that should be incorporated into the Valley's infrastructure development plan as a discrete first-phase capital item within the Elefsina qualification programme. This assessment reinforces the Valley designation argument at its most critical point: the Elefsina corridor is not merely an industrial asset that could theoretically be adapted for nuclear manufacturing. It is, in the professional judgment of experienced nuclear EPC practitioners, an enviable site whose existing infrastructure places it ahead of most purpose-built alternatives in terms of the physical prerequisites for nuclear-grade fabrication *(Stakeholder Consultation: Louie Shoukas, Vice President, PCL Construction, June 2026, Written Exchange. [Cross-reference Appendix D.])*.

A formal SMR Valley designation for the Piraeus-Elefsina corridor would require action at two levels simultaneously. At the EU level, Greece's Ministry of Environment and Energy, acting as the competent authority under the Net-Zero Industry Act, would need to submit a formal Valley designation proposal to the Commission's DG ENER and DG GROW, identifying the geographic perimeter, the participating industrial actors, the governance structure, and the supply chain capability case. The Net-Zero Industry Act provides the legal basis for this designation, and the SMR Strategy's Action 6 makes clear that such proposals from Member States are actively encouraged. At the national level, the designation would require a ministerial decision anchoring the Valley within Greece's industrial policy framework and designating a coordinating body, most plausibly a joint structure involving the Ministry of Environment and Energy, Enterprise Greece, and EEAE, to manage the Valley's governance, facilitate company qualification support, and interface with the Alliance's supply chain working group.

The EU funding that a Valley designation unlocks is significant and multi-channel. The Net-Zero Industry Act's strategic project mechanism can accelerate permitting and provide priority access to the InvestEU programme's nuclear guarantee window. The Euratom Research and Training Programme's 2026–2027 work programme, with a budget of €330 million for indirect actions, includes explicit provisions for SMR-related supply chain research that Valley-anchored consortia involving NCSR Demokritos and Greek university engineering departments could access (133). The EU SMR Strategy also relies on horizontal financing initiatives and cross-country frameworks including the Scaleup Europe Fund and potential Important Projects of Common European Interest (IPCEIs), the latter being a state aid mechanism that allows Member States to co-fund strategically significant industrial projects above normal state aid thresholds. A Greek SMR Valley that forms part of a transnational IPCEI proposal, linking Elefsina's fabrication capability with the Cernavodă project's component demand in Romania, for example, would represent one of the most credible uses of that instrument available to Greece.

The timeline for pursuing this designation is not open-ended. The Alliance's Strategic Action Plan for 2025-2029 identifies supply chain revitalisation as one of its ten priority actions, and the Valley mechanism is the primary geographic instrument through which that revitalisation is intended to occur. Member States that move first in establishing Valley designations will anchor the supply chain geography for the decade of deployment that follows. Those that delay will find the industrial cluster positions already occupied.

6.1.2 The SMR Coalition: Greece's Accession Path

A critical preliminary point must be established before examining Greece's accession pathway. As of May 2026, the SMR Coalition has not yet been formally constituted. Action 8 of the EU SMR Strategy proposes the establishment of a Coalition for interested EU Member States to advance policy, regulatory, licensing, and economic coordination for selected SMR designs, with the objective of facilitating deployment by the early 2030s. The operative word is "proposes": the Strategy commits the Commission to establishing the Coalition as an implementation step, but the formal accession criteria, working group structures, membership terms, and design-track selection process had not been published as of this report's completion. This is not unusual. It mirrors the trajectory of the European Industrial Alliance on SMRs itself, which was launched in February 2024 and progressively structured over the following eighteen months before its Strategic Action Plan was published in September 2025. The Coalition is following the same developmental arc, and the window for Greece to be among its founding participants, rather than a later joiner inheriting a framework built by others, is open right now.

The Stakeholder Architecture

Understanding the Coalition's accession pathway requires understanding who the relevant stakeholders are and what role each plays in the mechanism's governance structure.

The European Commission, through DG ENER's nuclear energy directorate, functions as the Coalition's architect and secretariat. DG ENER will convene the working groups, manage the design-track selection process, interface with national regulators, and produce the regulatory alignment outputs, joint early design reviews, regulatory sandbox frameworks, licensing timeline harmonization, that the Coalition is designed to generate. Coalition membership is voluntary and open to any interested EU Member State without qualification thresholds or financial contribution requirements. DG ENER's role is to manage the process and ensure its outputs serve the early 2030s deployment timeline.

Membership in the Coalition is a government-to-government matter expressed through national energy ministries. The Coalition is proposed for interested EU countries, the unit of participation is the Member State, not an agency, regulator, or company. In Greece's case the relevant ministry is the Ministry of Environment and Energy, acting through the General Secretariat for Energy and Mineral Raw Materials. The ministerial evaluation committee announced by Prime Minister Mitsotakis at the Paris Summit on 10 March 2026 is the most natural institutional vehicle for the Coalition accession decision, because the design-track orientation question that Coalition membership requires, which SMR design or designs does Greece associate itself with for the purposes of regulatory and policy coordination, is precisely the kind of technology assessment the committee was created to perform. A Coalition accession decision and a technology orientation conclusion are, in this respect, the same decision expressed through two different institutional channels.

National nuclear regulatory bodies become active participants in the Coalition's regulatory workstream once their government has joined. For Greece, this means EEAE. The Coalition's regulatory coordination function requires regulators to participate directly, joint early design reviews and regulatory sandbox processes are not conducted by ministries but by the technical regulatory bodies whose licensing decisions ultimately govern deployment. EEAE's current capacity, while limited relative to regulators in countries with operating reactor fleets, is not a precondition for Coalition membership: the mechanism is explicitly designed to build regulatory cooperation capacity through participation rather than requiring it in advance. Initial EEAE engagement at observer status in joint early design reviews is a realistic and appropriate entry point, with fuller regulatory participation developing as capacity is built through the Coalition's own working group activities.

Alongside the interested EU countries, the European Industrial Alliance on SMRs is expected to play a key role in driving the Coalition's implementation. The Alliance and the Coalition are sister mechanisms: the Alliance is the industry and research vehicle, the Coalition is the intergovernmental vehicle, and the two are designed to operate in parallel and reinforce each other. In practice this means that a country's participation in the Coalition creates institutional connectivity with the Alliance's supply chain and project working groups, while a company's Alliance membership creates commercial proximity to the design-track procurement processes that the Coalition's regulatory work is designed to accelerate. For Greece, the optimal positioning is simultaneous engagement in both mechanisms: government through the Coalition, industry and research institutions through the Alliance, creating a coherent national presence across both the political and commercial dimensions of European SMR development.

SMR developers are indirect but critically important stakeholders in the Coalition's design-track structure. The Coalition covers policy, regulatory, licensing, and economic aspects of selected SMR designs, meaning the designs selected as Coalition coordination tracks will receive the regulatory alignment and policy support that materially accelerates their deployment pathway. For developers, having their design selected as a Coalition track means multiple national regulators simultaneously reviewing and aligning on their design, a regulatory acceleration that no single-country licensing process can replicate. For Greece, this creates a specific and bounded strategic lever: accession to the NuWard Coalition track would signal to Naval Group and EDF that Greece is institutionally committed to the NuWard pathway at the government level, creating a political complement to the existing METLEN industrial partnership and strengthening Greece's position in any subsequent supply chain solicitation process. The Coalition is a commercial positioning instrument for the companies whose technology track a country chooses to join.

The Accession Sequence

Since the Coalition has not yet published formal accession procedures, the process will follow the standard pattern for EU intergovernmental coordination mechanisms of this type. Based on the Strategy text and comparable precedents, the realistic accession sequence for Greece comprises five steps.

The first is internal: the ministerial evaluation committee delivers a preliminary technology orientation conclusion identifying which SMR design track or tracks are relevant to Greece's industrial and energy policy interests. This is the domestic prerequisite, Greece cannot join a design-specific Coalition track without a government-level view on technology orientation, and the committee is the appropriate body to provide it.

The second step is political signalling: YPEN communicates Greece's intent to participate in the Coalition to DG ENER through a formal ministerial letter identifying the design track or tracks Greece wishes to engage with. This letter is the political trigger that initiates the formal accession process and places Greece on DG ENER's Coalition formation list.

The third step is administrative confirmation: DG ENER acknowledges Greece's participation and onboards YPEN into the relevant working group structure. There is no vote by existing members, no qualification assessment, and no financial contribution requirement. The Coalition is open to all interested Member States by design, and the Commission has a direct institutional interest in broadening participation to include Southeast European countries given the regional deployment pipeline the Strategy is designed to serve.

The fourth step is regulatory engagement: EEAE formally participates in the Coalition's regulatory workstream, beginning at observer status in joint early design reviews if full regulatory review participation is not yet feasible given current capacity constraints. This is the step that begins to build EEAE's nuclear power reactor regulatory experience in a structured international context, the most efficient available mechanism for closing the regulatory capacity gap identified in Section 4.3 of this report without requiring a domestic programme decision as a precondition.

The fifth step is commercial translation: Greek industrial actors, METLEN, ONEX, and the broader HIP network companies, engage with the Alliance's supply chain working groups in parallel, ensuring that the government-level Coalition participation translates into active commercial supply chain positioning. The Coalition creates the institutional framework; the Alliance is where the supply chain relationships are built. Both are necessary, and neither is sufficient alone.

The Timing Imperative

The Coalition's design-track structure creates an asymmetric relationship between early and late participants that the report's broader urgency argument requires making explicit. Countries that join early influence which designs are selected as Coalition tracks, how the regulatory alignment work is structured, and which national regulatory frameworks become the reference points for harmonisation. Countries that join late inherit the framework that others built, with correspondingly less influence over the design choices and regulatory precedents that will govern deployment across the region for decades.

For Greece specifically, the timing argument is not abstract. The METLEN–Naval Group MoU creates a commercial relationship with a NuWard co-developer that exists right now and is generating institutional proximity to the NuWard programme's supply chain development process. A Greek government accession to the NuWard Coalition track would convert that commercial relationship into a government-endorsed strategic commitment, signalling to Naval Group, EDF, and the broader NuWard consortium that Greece's industrial participation is backed by political will at the ministerial level. That signal, made early in the Coalition's formation, is worth considerably more than the same signal made after the Coalition's working group structures and design-track priorities have already been established without Greek input.

The realistic timeline for Greece's accession, assuming the ministerial committee delivers a preliminary technology orientation conclusion by late 2026, would see YPEN in a position to submit a Coalition accession letter to DG ENER in the first quarter of 2027. This timeline is achievable, it is consistent with the committee's mandate and working horizon, and it would place Greece among the Coalition's first wave of participating Member States, the cohort that shapes the framework rather than the one that joins it.

6.1.3 The European Industrial Alliance on SMRs: Application Pathway for Greek Organisations

The Alliance operates through specific working groups to improve enabling conditions for SMR development, demonstration and deployment, including the revitalisation of the nuclear supply chain. It brings together a broad spectrum of more than 350 SMR stakeholders, including industry leaders, researchers, and policymakers, united under a shared vision and joint plan for action. Membership is open to any organization, company, research institution, university, financial institution, or civil society organization, that can demonstrate a contribution to the SMR development, demonstration, or deployment ecosystem. There is no nationality restriction beyond EU or associated country affiliation, and there is no membership fee.

The application pathway is operationally straightforward. Applications are submitted through the Commission's single-market-economy portal, and the process requires a short organisational profile and a statement of intended contribution to the Alliance's working groups. The Alliance's activities aim to support specific SMR projects and accelerate their deployment on the European market, including identifying investment barriers, analysing funding opportunities, and exploring new financial blending options for SMR development, as well as establishing ways to inform and engage potential industrial users of SMRs such as energy-intensive industries and hydrogen producers (134).

For Greek organisations, the working groups with the most direct relevance are the Supply Chain Working Group, which addresses qualification gaps, manufacturing readiness, and vendor engagement, precisely the dimensions where Greek industrial actors have the most to contribute and the most to gain. The others are the Project Working Groups associated with the eight SMR projects that the Alliance has already selected as the most promising initiatives for European deployment. METLEN, ONEX, SpectrumNDT, Viohalco/Corinth Pipeworks, Hellenic Cables, and the major Greek civil engineering contractors are all organisations whose capability profiles map directly onto the Supply Chain Working Group's mandate. NCSR Demokritos and the National Technical University of Athens are the natural academic participants. The Hellenic Development Bank could engage through the financing working group, given the Alliance's explicit interest in blended finance mechanisms for supply chain investment.

The strategic value of Alliance membership for Greek organisations extends beyond the working group participation itself. The successful implementation of the Alliance's Strategic Action Plan requires strong industry and public sector commitment, in addition to collaboration among diverse stakeholders, with the Alliance committed to working closely with its members, relevant Commission services, and other EU institutions and international organisations. Companies that are Alliance members when vendor supply chain solicitations are issued will have established institutional relationships with the developers, utilities, and financial actors whose procurement decisions determine who participates in the European SMR supply chain. Alliance membership is, in practical terms, an early positioning mechanism for the vendor engagement that supply chain entry requires.

The recommendation of this report is that Greek participation in the Alliance be coordinated rather than fragmented. A national coordinator, most plausibly Enterprise Greece, acting in concert with the Ministry of Environment and Energy, should identify the priority Greek organisations for Alliance membership, support their applications, and ensure that Greek participation in the Supply Chain Working Group is consolidated into a coherent national positioning rather than a collection of disconnected individual memberships.

6.1.4 The Prior Requirement: The Declaration to Triple Nuclear Energy

Before any of the three mechanisms above can be pursued with full institutional credibility, Greece faces a more fundamental positioning gap. The Declaration to Triple Nuclear Energy now encompasses a coalition of 38 countries committed to working together to at least triple nuclear capacity by 2050 and to enable policies that support the deployment of new reactors, the life extension of existing plants, and the development of advanced technologies (135). The current signatories include every major EU nuclear nation: France, Finland, Sweden, the Czech Republic, Slovakia, Poland, Romania, Bulgaria, and, as of the Paris Summit, Belgium and Italy. Greece is not among them.

This absence is not an insurmountable obstacle to Alliance membership or Coalition accession, both of which are technical rather than political mechanisms. But it is an obstacle to the kind of high-level diplomatic positioning, in EU Council energy formations, in bilateral vendor discussions, in IAEA and NEA forums, that gives Greece's SMR industrial ambitions political weight. Endorsing the Declaration requires no domestic deployment commitment. It requires only a ministerial-level decision to associate Greece with the global coalition of governments that have acknowledged nuclear energy's role in the energy transition. The ministerial evaluation committee announced at Paris is the natural vehicle for this decision, and it should be treated as a priority output of that committee's work, achievable on a short timeline independent of the longer-horizon deployment assessment.

6.2 The US FIRST Programme

> **Strategic Opportunity:** *FIRST has not yet been activated for Greece: a first-mover opportunity that this report is designed to help address.*

6.2.1 Programme Architecture: What FIRST Is and What It Delivers

The Foundational Infrastructure for the Responsible Use of Small Modular Reactor Technology programme, universally referred to by its acronym, FIRST, is administered by the Bureau of International Security and Nonproliferation within the US Department of State's Office of Cooperative Threat Reduction. The programme was announced at the Biden Administration's Leaders Summit on Climate in April 2021, with an initial investment of USD 5.3 million, as a multiagency US government initiative providing capacity-building support to partner countries exploring the potential for SMRs and other advanced nuclear reactor technologies (136). Under the subsequent Trump Administration, FIRST was repositioned within a more explicitly commercial and geopolitical framework. FIRST is now described as ISN's flagship programmatic tool to advance the President's Executive Order on Unleashing American Energy in global nuclear energy markets, harnessing the power of US public-private partnerships and the innovation of the US nuclear industry to engage partner countries worldwide seeking to build or expand their nuclear energy programmes.

The programmatic content of FIRST is deliberately broad and adaptable to each partner country's stage of nuclear development. Expertise delivered through FIRST workshops, webinars, technical consultancies, study tours, feasibility studies, SMR simulators, regional training hubs, and site visits covers SMR technology selection, SMR deployment roadmaps, fleet deployment regional harmonisation initiatives, nuclear security and nonproliferation considerations, nuclear safety and licensing best practices for advanced reactors, SMR site selection and characterisation, nuclear workforce development, stakeholder engagement, preparation for SMR financing, integrating nuclear in the energy mix, and planning for responsible spent fuel and SMR waste management (137). The programme operates on both a bilateral and regional basis, directing its efforts toward priority countries in order to maximise programmatic impact.

Four programme streams within FIRST are particularly relevant to Greece's candidacy. The first is regulatory capacity-building: FIRST provides direct technical assistance to national regulatory authorities seeking to develop the institutional framework and technical competencies necessary to licence SMR designs. For a country such as Greece, whose regulatory body EEAE has the institutional foundations of a competent nuclear authority but lacks the SMR-specific licensing experience that engagement with US vendors would require, this stream is directly applicable. The second is workforce development, delivered primarily through SMR classroom simulators, physical training facilities, such as the one provided to the Kazakhstan Institute of Nuclear Physics in partnership with Holtec International and WSC Inc., which serve as regional training hubs designed to facilitate the safe and secure deployment of SMRs in the host country and across neighbouring countries (138). The third is the feasibility study grant mechanism, discussed in detail in Section 6.2.4 below. The fourth is financing preparation: FIRST explicitly includes preparation for SMR financing as a programme deliverable, creating a direct interface between FIRST engagement and the DFC project financing pipeline that has already been active in Greece through the Elefsina Shipyard loan.

Within FIRST, a further sub-programme known as the Nuclear Expediting the Energy Transition (NEXT) programme provides a suite of advanced project preparation tools for countries nearing a potential SMR deployment decision, including Project Phoenix, which is intended to support countries considering coal-to-SMR conversions to meet their clean energy needs through secure and safe nuclear energy (110). The former lignite-producing regions of Western Macedonia, specifically the Ptolemaida and Florina basins, constitute precisely the industrial geography that Project Phoenix was designed to serve, with a skilled workforce, existing grid infrastructure, and former thermal generation sites providing a candidate site profile directly analogous to the Doiceşti site in Romania, where the FIRST-supported NuScale VOYGR-6 project is now under implementation.

6.2.2 Partner Countries and the European Regional Architecture

FIRST currently engages partner countries across five continents, with its European and Eurasian portfolio constituting the most strategically active cluster. Early signatories to a joint statement on FIRST cooperation included Estonia, Ghana, Japan, Kazakhstan, Latvia, the Philippines, the Republic of Korea, Romania, Ukraine, and the United Kingdom (139), a group that illustrates the programme's simultaneous pursuit of emerging nuclear markets and the reinforcement of existing US partnerships in strategically important geographies. Within Europe, Romania is the most advanced FIRST engagement: in 2021, USTDA-funded technical assistance resulted in the selection of NuScale as the provider of SMR technology and the decommissioned coal-fired Doiceşti power station as the site for Romania's first SMR plant, followed in 2022 by a USTDA-assembled coalition of partners and a feasibility study grant for a first-stage FEED study (140).

The European dimension of FIRST expanded significantly in September 2025 with the launch of the SMR Pan-Regional Interest Nuclear Group, known as SPRING, during a ceremony in Warsaw. The SPRING initiative, part of the FIRST programme and implemented by AdSTM and Sargent and Lundy, will facilitate efficient and harmonised fleet deployment of US SMR technologies in Europe and Eurasia by delivering technology-specific regulatory and project management expertise to interested partner countries, fostering pan-regional collaboration as well as regulatory and process efficiencies at the national level among utilities, vendors, and regulatory bodies. Participants from Armenia, Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, and Slovenia attended the inaugural workshop (141).

Greece was not among the SPRING founding participants. That absence is the most direct and specific expression of Greece's current positioning gap vis-à-vis the US nuclear engagement architecture in Europe, and it is the gap that this section is designed to provide the analytical basis for closing. Of the thirteen countries present at the Warsaw ceremony, eleven are EU members; Romania, Bulgaria, and Croatia are Greece's immediate regional neighbourhood. The SPRING architecture is precisely the platform through which the regional harmonisation of SMR licensing frameworks, a precondition for the kind of repeat manufacturing and multi-country fleet deployment that the hub argument in Section 4.4 describes, will be developed. A Greece that is not in this room when these frameworks are negotiated will find the frameworks harder to adapt to its own institutional context when it eventually seeks engagement.

6.2.3 Building the Greece FIRST Candidacy

The strategic case for Greece's candidacy as a FIRST partner country does not begin from a standing start. It is grounded in a substantial and documented record of US-Greek government-to-government engagement on energy, infrastructure, and security that provides the geopolitical and institutional foundation on which a nuclear cooperation dialogue can be built.

The most direct evidence is the DFC-ONEX Elefsina transaction. In November 2023, DFC CEO Scott Nathan signed a financing agreement for a USD 125 million direct loan to ONEX Elefsis Shipyards and Industries to rehabilitate and modernise the Elefsina shipyard near Athens, with the stated purpose of creating a strategically critical maritime and energy supply hub for the region, expanding the shipyard's capacity to service LNG ships, promoting European energy security and diversification, creating new local jobs, and bolstering the US-Greece partnership through a transparent, high-quality investment (142). The loan, the first DFC direct loan of its kind in Greece, received DFC board approval in May 2023 and was described by ONEX President Panos Xenokostas as attesting to the strong ties of cooperation between the two countries and the geopolitical importance of the Elefsina undertaking (143). The DFC-ONEX relationship is not merely a bilateral financing transaction; it is a documented US government determination that the Elefsina industrial corridor is strategically significant infrastructure warranting US development finance support. That determination is directly relevant to a nuclear supply chain hub designation at the same site.

The Alexandroupolis dimension reinforces the same strategic logic on the energy security and defence axes. The port of Alexandroupolis functions within a five-year framework, the Greek-American Mutual Defense Cooperation Agreement, enacted through Greek Law 4932/2022, that grants US military access to specific Greek sites, with Alexandroupolis providing a crucial logistical hub in the northeastern Mediterranean offering access to the Black Sea region and the Balkans, and an alternative to reliance on the Turkish Straits. The Alexandroupolis FSRU entered commercial operations in October 2024 and has become a cornerstone of Greece's ambition to serve as a major transit hub for LNG bound for central and eastern Europe, with the Vertical Corridor strategy connecting the terminal to pipeline systems in Bulgaria and Romania (144). The US government has actively supported the Vertical Corridor, and the 6th Partnership for Transatlantic Energy Cooperation conference hosted in Athens in November 2025 saw Venture Global sign Greece's first-ever long-term LNG supply agreement with a US exporter, with the company describing Greece as a major point of entry for US LNG into Central and Eastern Europe (145).

The defence cooperation relationship between Greece and the United States is, in the context of FIRST candidacy, an enabling condition rather than a direct qualification criterion. FIRST is a civilian nuclear programme, not a defence programme, and its eligibility criteria are grounded in nuclear safety, security, and nonproliferation standards rather than in alliance membership or basing arrangements. However, the US government's track record of using FIRST to deepen strategic ties with partner countries, explicitly acknowledged in the programme's own documentation, means that the depth of the bilateral security relationship is a relevant contextual factor when the State Department's Bureau of ISN assesses where to direct its limited programmatic resources. A country with US military access agreements, active DFC investment, a documented role in US LNG export strategy, and a trilateral energy partnership with Israel and Cyprus involving the US State Department presents a government-to-government relationship of a quality and depth that most FIRST candidate countries cannot match.

6.2.4 The USTDA Feasibility Study Grant: Mechanism, Precedent, and Greece's Application Case

The US Trade and Development Agency feasibility study grant is the most immediate and practically accessible instrument within the broader US nuclear cooperation architecture for a country at Greece's stage of nuclear engagement. USTDA grants are the standard entry mechanism through which the US nuclear cooperation ecosystem, FIRST, DFC, US national laboratories, and US vendor companies, is activated in a partner country, and the Romanian and Bulgarian precedents provide a clear template for how Greece could apply this instrument.

USTDA's civil nuclear energy programming generates opportunities for US companies while helping overseas partners advance their energy and climate priorities. In Romania, USTDA funded a FEED study in October 2022 to support Romania in deploying the country's, and Europe's, first SMR nuclear power plant, with the grant going to RoPower Nuclear S.A., a subsidiary of Nuclearelectrica, following previous USTDA assistance that led to Romania's selection of NuScale to provide SMR technology in May 2022 (146). In Bulgaria, USTDA signed a grant agreement with state-owned Bulgaria Energy Holding for a detailed technical analysis of US-sourced SMR design options to support Bulgaria's planned deployment of one or more SMR nuclear plants, including an examination of potential plant sites and the development of a roadmap outlining a path to implementation, including an approach to securing financing (147). More recently, the Philippines' Manila Electric Company secured a USD 2.7 million USTDA grant to conduct a feasibility study on the adoption of SMRs, covering technology scanning and evaluation of various SMR technologies (148).

The eligibility and application mechanics of a USTDA grant are straightforward. USTDA can award grants to overseas project sponsors in the public, private, or public-private sectors, including special purpose vehicles and joint ventures, with the project sponsor applying for the grant required to be incorporated in the country in which the project is located. The Agency requires a qualified and experienced US contractor to carry out the grant-funded project preparation work, with up to 30 percent of the grant amount available for local labour. For Greece, the appropriate project sponsor would be a Greek public or public-private entity with an energy or industrial mandate, most plausibly EEAE acting jointly with the Ministry of Environment and Energy, or a dedicated project preparation vehicle established for this purpose. The US contractor would be selected from the pool of firms with established nuclear project preparation credentials, Sargent and Lundy, which is already the implementing partner for both the Romania FEED study and the SPRING initiative, is the most directly relevant candidate.

The content of a Greek USTDA grant application would encompass three elements that correspond directly to Greece's dual strategic purpose. The first element is a supply chain readiness assessment: a structured analysis of existing Greek industrial capability against the qualification requirements of each major US SMR vendor active in the European market, identifying the specific gaps and the investment required to close them. This report constitutes, in substantial part, the analytical foundation for that assessment. The second element is a regulatory gap analysis: a comparison of EEAE's current institutional framework and staffing against the regulatory infrastructure that a future domestic SMR licensing process would require, with a structured roadmap for the capacity development steps needed over the next five to eight years. This corresponds directly to the regulatory challenges identified in Section 4.3. The third element, applicable if Greece pursues the domestic deployment pathway alongside the hub strategy, is an indicative siting analysis: a structured assessment of candidate sites against IAEA SSG-35 criteria. A USTDA grant that funds all three of these elements simultaneously would provide the US government with the evidence base it needs to justify deeper FIRST engagement with Greece, while providing Greek industrial and government actors with the actionable technical outputs they need to make credible investment and policy decisions.

6.2.5 US Embassy Athens as the Institutional Entry Point

The operational entry point for Greece's engagement with the FIRST programme and the USTDA grant mechanism is the Economic Section of the US Embassy in Athens. The Embassy's economic portfolio has been significantly upgraded in recent years to reflect the depth and breadth of the US-Greece bilateral commercial and energy relationship, with dedicated energy and maritime attachés managing the Alexandroupolis, Elefsina, and 3+1 energy ministerial dossiers. The Embassy's nuclear energy portfolio has not historically been active, reflecting Greece's absence from the civil nuclear energy conversation, but this absence also means there is no established institutional position to overcome, only a new conversation to begin.

The practical sequence for initiating a FIRST engagement through the Embassy is well established from the precedents of Romania, Bulgaria, and the Philippines. The first step is a ministerial-level expression of interest: a formal letter from the Minister of Environment and Energy to the US Ambassador in Athens, requesting information on Greece's eligibility for FIRST programme participation and expressing the Greek government's interest in pursuing a USTDA feasibility study grant. This letter would reference the Greek government's existing commitments, the Prime Minister's Paris declaration of March 2026, the Athens Agreements of April 2026, and the ministerial evaluation committee, as evidence of the political-level commitment that FIRST's programme criteria require. The second step is an Embassy facilitation of a technical-level dialogue between EEAE, the Ministry of Environment and Energy, and the Bureau of International Security and Nonproliferation in Washington, through which the specific shape of a Greek FIRST engagement would be scoped. The third step is the USTDA grant application itself, developed with Embassy support and submitted through USTDA's standard project preparation assistance process.

This sequence requires no prior domestic deployment decision, no advanced regulatory framework, and no vendor partnership in place. It requires only a ministerial decision to initiate contact, a decision that is fully within the executive capacity of the current Greek government and that carries no binding commitment on any of the downstream questions that the ministerial evaluation committee is still working through. The USTDA feasibility study is itself a tool for answering those questions more rigorously than is currently possible. Initiating the process is not a precondition for reaching a conclusion; it is the analytically rational way of reaching a better one.

6.2.6 The Dual EU-US Track

Before mapping the dual-track architecture, one clarification is required to prevent a misreading that a technically informed reader might otherwise form. Türkiye holds a 123 Agreement with the United States, is in active SMR discussions with Rolls-Royce and Westinghouse, and benefits from US Export-Import Bank readiness to finance Turkish SMR projects. Greece therefore does not hold a monopoly on the US bilateral engagement track. The "dual track" framing should not be understood as claiming that Greece is the only country in the region with both EU and US engagement pathways, it is not. The framing is accurate in a more specific and more important sense: Greece is the only country in the Southeast European peer group that combines the EU single market membership that determines procurement eligibility for the regional EU-financed SMR pipeline with the depth of US bilateral strategic relationship, DFC capital deployed, LNG infrastructure endorsed, defence cooperation institutionalized, that makes FIRST programme activation both achievable and strategically rational. The two tracks are not symmetric in their importance. EU single market access is the primary and structurally irreplaceable differentiator for the near-term opportunity. The US engagement track is additive, accelerating and deepening a positioning that EU membership alone already makes possible. The section that follows maps both tracks on that basis.

The final and most strategically significant argument for Greece's FIRST candidacy is one that transcends the programme mechanics and speaks to Greece's position within the broader architecture of global SMR governance.

No other country in Southeast Europe is simultaneously positioned to pursue the EU track: Alliance membership, Coalition accession, Valley designation, NZIA regulatory sandbox, and the US track: FIRST partnership, USTDA feasibility study, DFC financing, with the institutional credibility and government-to-government relationship depth that Greece possesses.

Romania and Bulgaria are advanced on the US track, both have USTDA grants, and Romania has a full DFC-backed NuScale programme, but neither is pursuing the EU track with the same industrial geography advantage or the same Euratom-anchored supply chain positioning that the Piraeus-Elefsina corridor provides. Poland is deeply embedded in the US track through its AP1000 programme with Westinghouse and its BWRX-300 programme through ORLEN Synthos Green Energy, but its supply chain geography serves the Northern European cluster rather than the Southeast European and Eastern Mediterranean markets that Greece uniquely serves. The Czech Republic, Slovakia, and Hungary are active on both tracks but are land-locked economies without the maritime logistics infrastructure that defines Greece's hub advantage.

Greece's dual-track positioning is not a theoretical construct. It is grounded in the documented evidence of the DFC-ONEX transaction on the US side, the METLEN-Naval Group relationship and the Euratom membership on the EU side, and the 3+1 energy ministerial framework that spans both tracks simultaneously. The relationship between Greece and the United States in the energy sector has significantly deepened since 2022, with Greece emerging as a strategic US energy gateway for Southeast Europe through its existing and planned LNG terminal infrastructure and the Vertical Corridor that connects those terminals to pipeline systems in Bulgaria, Romania, Hungary, Slovakia, Moldova, and Ukraine. The nuclear extension of this relationship, Greece as the logistics and services hub for a US-technology SMR fleet deployed across the same Southeast European geography, is the natural next chapter of a strategic energy partnership that the US government has already invested in and that Greece has already demonstrated the industrial capacity and geopolitical reliability to support.

The dual-track argument is also the answer to the most common objection to Greece's nuclear ambitions: that Greece is too small, too late, and too politically constrained to compete with countries that have been building nuclear capability for decades. Greece does not need to compete with Poland for the AP1000 supply chain, or with the Czech Republic for the Rolls-Royce SMR mandate. It needs to establish itself as the indispensable gateway and service hub for the Southeast European and Eastern Mediterranean nuclear cluster, a position that requires it to be present and credible on both the EU institutional track and the US government-to-government track simultaneously. No other country in the region is structurally positioned to play that role. Greece's task is to claim it before the window closes.

6.3 Steps to Nuclear-Grade Qualification for Greek Industry

6.3.1 The Qualification Imperative

The gap between strategic intent and commercial participation in an SMR supply chain is, in most cases, not a gap of industrial capability. It is a gap of documented, third-party-verified quality assurance. A Greek company that fabricates precision components for the defence or marine sector, or that performs advanced non-destructive testing for offshore or heavy process industry clients, may already execute processes of equivalent technical rigour to those required by SMR vendors. What it cannot yet demonstrate is that those processes have been independently audited against the specific standards that nuclear procurement officers require before they place a purchase order. The qualification pathway is the structured, sequenced process by which that demonstration is made.

This section maps the qualification pathway in three layers, each relevant to a different tier of supply chain participation and a different horizon of investment. ISO 19443 certification, which is the minimum threshold for entry into any SMR supply chain as a Tier 3 or lower supplier of items important to nuclear safety. The ASME N-stamp, which becomes the relevant standard for companies seeking to manufacture nuclear-grade pressure boundary and structural components at Tier 1 or Tier 2, and vendor-specific qualification programmes, through which the three vendors most active in the European and Southeast European market. Rolls-Royce SMR, GE Hitachi Nuclear Energy, and Holtec International, are actively building the supply chains that will execute their first fleet deployments. The section concludes with a proposed structure for a national Greek Nuclear Supply Chain Qualification Programme that would coordinate these individual company-level efforts into a coherent, government-supported industrial initiative.

6.3.2 ISO 19443: The Foundational Quality Standard for Nuclear Supply Chain Entry

What ISO 19443 requires and how it differs from ISO 9001

ISO 19443:2018, amended in 2024 to integrate climate considerations, is the first internationally recognised quality management standard developed specifically for organisations supplying products and services to the nuclear energy sector. It specifies quality management system requirements for organisations in the supply chain of the nuclear energy sector that supply products and services important to nuclear safety, designated by the acronym ITNS, aligning with the structure of ISO 9001:2015 while adding specific requirements relevant to nuclear safety, risk management, documentation, supplier qualification, and material traceability (79)

The distance between ISO 9001 and ISO 19443 is, for companies already operating under a mature ISO 9001 system, measurable and bridgeable, but it is not trivial. Where ISO 9001 focuses on the requirements of a quality management system in general terms, ISO 19443 has built upon these requirements with a specific focus on nuclear safety, laid out with a view to implementation throughout the entire nuclear supply chain for organisations producing equipment and services important for nuclear safety, including engineering, procurement, and construction companies and manufacturers (112). The principal additions beyond the ISO 9001 baseline are the following. First, the formal embedding of a nuclear safety culture: a documented, management-led commitment to safety as an organisational value that permeates hiring, training, process design, and corrective action, not merely as a compliance obligation but as a demonstrated behavioural standard. Second, the determination of ITNS status, a structured, documented assessment of which of the organisation's products, activities, and services are important to nuclear safety, which drives the scope of the quality management system and the stringency of controls applied. Third, enhanced requirements for counterfeit, fraudulent, and suspect items, designated CFSI, covering supplier qualification, receipt inspection, material traceability, and the maintenance of qualified manufacturer lists. Fourth, expanded documentation and records management requirements, covering configuration management, design change control, and the production of quality documentation packages that accompany each item through fabrication, inspection, and delivery. Fifth, commercial grade dedication procedures for items procured from non-nuclear-qualified suppliers but used in ITNS applications, a critical competency for companies entering the nuclear supply chain that have existing commercial supplier relationships they wish to leverage.

ISO 19443 and ISO 9001 can be audited simultaneously in a single audit process with a single certification body, with no additional cost or duplication of effort, meaning that a company already certified to ISO 9001 that pursues ISO 19443 adds the nuclear-specific layer without incurring the full cost of a separate audit cycle (112).

Timeline and cost

A complete ISO 19443 audit cycle takes three years and begins with the initial certification audit; surveillance audits take place in the second and third year, with the duration of the on-site audit defined by ISO/IEC 17021-1:2015 and ISO/TS 23406:2020 and calibrated to the size of the company (112). The ISO 19443 certification is valid for three years, during which two surveillance audits must be carried out during the certification cycle to validate its maintenance (149). For a company with no prior nuclear quality system experience, the realistic preparation timeline, from gap analysis through system documentation, internal auditing, corrective action, and readiness for Stage 1 audit, is typically twelve to eighteen months, depending on the existing maturity of the ISO 9001 system, the scope of ITNS activities, and the availability of qualified internal resources. The total investment for a mid-sized company, covering internal resource allocation, external gap analysis consultancy, system documentation development, staff training, and certification body fees, ranges from approximately €80,000 to €250,000 depending on company size and complexity of scope. A figure that is substantial for an individual SME but is modest relative to the commercial value of even a single nuclear supply chain contract.

The certification bodies currently accredited to audit and certify against ISO 19443 include TÜV SÜD, DNV, LRQA, RINA, and SGS. All have established European operations and could service Greek clients. The recommended approach, validated by the experience of WIKA, the first German company to achieve ISO 19443 certification with an accredited body, is to conduct a pre-audit gap analysis review of the company's existing quality management system before committing to the formal audit, ensuring that the Stage 1 and Stage 2 audits are passed at the first attempt and that no avoidable non-conformities are identified during the certification process (150).

SpectrumNDT: Greece's most advanced candidate for ISO 19443 certification
Among the Greek industrial companies identified in Chapter 3 of this report, SpectrumNDT is the strongest near-term candidate for ISO 19443 certification and the most immediately actionable target for a national qualification support programme. SpectrumNDT operates advanced non-destructive testing services that are directly applicable to nuclear-grade component verification. The company holds ISO 9001 certification, operates to EN ISO 9712 personnel qualification standards, and has established quality procedures covering traceability, calibration, and documented inspection records that provide a credible baseline for ISO 19443 gap analysis.

The gap between SpectrumNDT's current quality system and ISO 19443 certification readiness centres on three areas. The formal determination of ITNS activities and the associated documentation of safety significance classification; the embedding of a documented nuclear safety culture programme at management and operational levels; and the development of CFSI controls and a qualified supplier list for the calibration standards, reference blocks, and consumables used in nuclear-grade inspection. None of these gaps represents a fundamental operational change; they represent the formalisation and nuclear-specific extension of practices that the company already executes informally or in adjacent sectors. The investment required to close these gaps, with appropriate external consultancy support, is estimated at €120,000 to €180,000 over a twelve-month preparation period, inclusive of certification body fees. The commercial return on that investment, in the form of qualification for inspection contracts on the Romanian Cernavodă refurbishment programme, the Bulgarian Kozloduy 7&8 project, and the growing queue of European SMR projects requiring nuclear-grade NDE services, is a multiple of that figure over a five-year contract horizon.

SpectrumNDT is used here as the most visible and best-documented example, but it is not the only Greek company for which this analysis applies. Greek heavy fabrication companies operating in the marine, defence, and process industries that already hold ISO 9001 and carry out welding, machining, or structural fabrication to codes such as EN 1090, ISO 3834, or ASME VIII are, in several cases, within a twelve-to-eighteen-month preparation horizon of ISO 19443 readiness. The qualification support programme proposed in Section 6.3.5 is designed to identify and accelerate precisely those companies.

6.3.3 The ASME N-Stamp: The Tier 1-2 Manufacturing Standard

What the N-stamp covers and when it becomes relevant

The ASME N-stamp, formally the N-type Certificate of Authorization issued by the American Society of Mechanical Engineers under Section III of the ASME Boiler and Pressure Vessel Code, is the globally recognised standard for the manufacture of nuclear-grade pressure boundary and structural components. N-type Certificates of Authorization are issued by ASME following a rigorous survey to verify the adequacy and effective implementation of the quality assurance programme, and allow Certificate Holders to certify and stamp newly constructed components, parts, and appurtenances used at a nuclear facility. The certificate categories relevant to manufacturing include: the N certificate, covering the construction of vessels, pumps, valves, piping systems, storage tanks, core support structures and concrete containments; the NPT certificate, covering fabrication of parts, appurtenances, welded tubular products and piping subassemblies; the NS certificate, covering fabrication of supports without stamping; and the NV certificate, covering construction of pressure relief valves (151).

The N-stamp becomes the relevant qualification standard, and a contractual requirement, for Greek companies seeking to participate at Tier 1 or Tier 2 of an SMR supply chain, where the manufactured items are primary circuit components, pressure boundary structures, or safety-classified mechanical assemblies. For Tier 3 participation, the supply of materials, sub-components, machined parts, or services such as NDT, heat treatment, or surface finishing, ISO 19443 certification, combined with vendor-specific supplier qualification, is typically sufficient. The decision about whether to pursue N-stamp certification is therefore a function of the specific supply chain position the company is targeting: for a Greek precision machining company supplying non-pressure-boundary metallic components, ISO 19443 provides the necessary entry credential; for a Greek heavy fabrication company targeting reactor internals, heat exchanger fabrication, or primary piping manufacture, the N-stamp becomes a prerequisite.

The pathway for a Greek company

Vendors of new reactor types, including SMRs, are actively engaged with ASME and other US-based nuclear standards bodies, including the American Nuclear Society and the Nuclear Energy Institute, to coordinate updates to the ASME N-stamp criteria to ensure applicability of the code for these new designs. This standards evolution is relevant to Greek companies because it means that the N-stamp framework is actively being adapted to the manufacturing requirements of the SMR designs most relevant to the European market, and that early engagement with the ASME certification process positions a company to be qualified under the updated criteria as they are issued (152).

The N-stamp application and survey process requires, as a prerequisite, that the applicant has an established quality assurance programme compliant with ASME NQA-1, the Nuclear Quality Assurance standard that specifies quality requirements for nuclear facility applications, and ASME Section III design and fabrication requirements for the specific component categories being applied for. The ASME nuclear certification programme, which commenced in 1968, issues certificates following a rigorous survey by ASME-authorised inspection agencies to verify the adequacy and effective implementation of the organisation's quality programme (153). The survey is conducted jointly by ASME and the prospective Certificate Holder's Authorised Inspection Agency, typically a body such as Lloyd's Register, TÜV, or Bureau Veritas, and covers quality programme documentation, manufacturing procedures, welding qualifications, material control, non-conformance reporting, and calibration management.

For a Greek company that does not currently hold ASME N-stamp certification, the realistic preparation timeline is three to five years from the initiation of a dedicated qualification programme. This timeline encompassing: the development of an NQA-1-compliant quality assurance programme; the qualification of welding procedures and welders to ASME Section IX; the development of design and fabrication documentation to ASME Section III requirements; the conduct of a pre-survey readiness review; and the formal ASME survey and certificate issuance. The investment is correspondingly larger than ISO 19443, typically in the range of €500,000 to €2 million for a manufacturing company, depending on the number of component categories and the complexity of existing quality infrastructure. Is most appropriately structured as a co-financed investment under ERDF or industrial modernisation schemes, with government co-financing justified by the strategic supply chain positioning that the certificate enables.

The recommended sequencing for a Greek company is unambiguous. ISO 19443 first, establishing the nuclear safety culture and quality management foundation. NQA-1 programme development concurrent with the first ISO 19443-surveillance cycle. N-stamp application initiated in the third to fourth year of the programme, timed to coincide with the procurement windows of the live European projects, Kozloduy 7&8, the Czech Republic Rolls-Royce SMR programme, and the UK SMR fleet, for which N-stamped components will be required in the early 2030s.

6.3.4 Vendor Qualification: Rolls-Royce SMR, GE Hitachi, and Holtec

Beyond the generic quality standards of ISO 19443 and the ASME N-stamp, each major SMR vendor maintains its own supplier qualification programme with specific documentation requirements, approval processes, and performance monitoring frameworks. Understanding these programmes and engaging with them proactively, is the essential complement to standard certification, because standard certification is a necessary but not sufficient condition for vendor approval. A company can hold ISO 19443 certification and still fail a vendor qualification survey if it cannot demonstrate the specific procedural controls, traceability systems, or technical capabilities that the vendor's quality requirements document demands. The three vendors most relevant to Greece's near-term supply chain positioning are examined in turn.

Rolls-Royce SMR
Rolls-Royce SMR is, of the three vendors examined here, the most structurally open to new supplier engagement and the most clearly documented in its approach to supply chain development. Rolls-Royce SMR has developed a Supplier Management System Requirements document, the SMSR, which provides a standard set of requirements and processes to be applied between Rolls-Royce SMR and its supply chain. The SMSR is based upon the requirements of ISO 9001:2015, NQA-1, IAEA GSR Part 2, and ASME. ISO 19443 is explicitly acknowledged as the emerging international standard against which Rolls-Royce SMR assesses its suppliers, with the company stating that it will actively support and develop new entrants into the supply chain (154).

The Rolls-Royce SMR supplier approval process is based on several assessments including quality management system evaluation, manufacturing capability assessment, and planning and control review, with the company seeking a supply chain that utilises the expertise of both established nuclear suppliers and non-nuclear suppliers (155). The entry point for new suppliers is the Rolls-Royce SMR Supplier Portal, through which companies register their interest and commodity or scope of work, enabling Rolls-Royce SMR to match supplier capabilities against programme requirements and to engage suppliers at the appropriate point in the procurement cycle. In March 2025, Rolls-Royce SMR held its Supplier Conference in Sheffield, with the explicit objectives of supporting the creation of a diverse and resilient supply chain essential to deploying a fleet of factory-built nuclear power plants, focusing on SME engagement, and allowing existing and potential new suppliers to engage with Rolls-Royce SMR and its Tier 1 suppliers to better understand requirements and near-term opportunities (156).

The key flow-down requirements from the SMSR that Tier 2 and Tier 3 suppliers must implement include: a quality management system meeting the SMSR requirements, with ISO 19443 certification explicitly valued as evidence of compliance; a documented supply chain map covering all sub-tier suppliers; full corrective and preventive action capability with documented records available to Rolls-Royce SMR on request (157); and compliance with Rolls-Royce SMR's cyber security standard for digital systems. Rolls-Royce SMR monitors the quality and performance of its supply chain with the level of surveillance aligned to the works performed by each supplier, and requires suppliers to provide a full supply chain map detailing all tiers of sub-tier suppliers contributing to the contracted works.

For a Greek company targeting Rolls-Royce SMR supply chain entry, the recommended approach is: register on the Supplier Portal immediately, with accurate commodity and capability descriptions. Initiate ISO 19443-gap analysis and certification preparation; and seek an early technical dialogue with Rolls-Royce SMR's supply chain development team, referencing Greece's participation in the EU SMR Alliance framework and the geographic advantages of the Elefsina industrial corridor for the Czech Republic and Central European deployment programmes.

GE Vernova Hitachi Nuclear Energy

GE Hitachi Nuclear Energy's approach to supply chain qualification for the BWRX-300 is structured around a formal Qualified Supplier Group that is being built incrementally as the programme advances toward the first deployment at Ontario Power Generation's Darlington site in Canada, with European deployments following in Poland, Czechia, and other markets. GEH is forming a group of qualified supply chain companies to advance the global deployment of the BWRX-300, with the purpose of ensuring a reliable, cost-effective, and innovative process for the manufacture and commercialisation of the reactor. Suppliers who meet pre-defined criteria, customer requirements, and demonstrate a willingness to invest in BWRX-300 supply chain capabilities are eligible for selection to the group (158).

The European Commission approved a BWRX-300 Project Working Group under the EU SMR Industrial Alliance. Established by OSGE and GE Hitachi, with specific objectives covering the standardisation of technology licensing across EU countries, enabling the participation of EU-based suppliers in the supply chain through joint development of a robust European supply chain, and preparation of relevant competencies among European industrial partners (159). This EU-level working group is the structural mechanism through which European companies, including, potentially, Greek companies, can engage with GEH's qualification process within an EU institutional framework, making BWRX-300 supply chain engagement directly actionable through Greece's participation in the EU SMR Alliance.

GEH's technical requirements for Tier 2 and Tier 3 BWRX-300 suppliers draw on the same standards architecture as the wider US nuclear industry: ASME Section III and NQA-1 for nuclear-classified components; ASME Section VIII and ISO 9001 or ISO 19443 for non-nuclear-classified but quality-significant components; and vendor-specific commercial grade dedication procedures for commercial items used in safety-significant applications. The BWRX-300's design philosophy, which extensively leverages existing NRC-certified reactor design heritage and proven components to reduce both cost and qualification burden, creates a more accessible entry point for new suppliers than first-of-a-kind designs, because more of the qualification precedents are already established.

Holtec International

Holtec International presents a different qualification profile from the two preceding vendors. Holtec describes itself as the nuclear industry's only reactor supplier with in-house design, manufacturing, construction, and commissioning capability alongside a continuously exercised functional supply chain (160). This vertically integrated model means that Holtec's external supply chain requirements are concentrated at Tier 2 and Tier 3 for specialised components and services that its own manufacturing facilities do not cover in-house. Holtec's supply chain includes over 200 domestic and foreign pre-qualified suppliers providing various types of goods and services to different quality criteria and safety significance levels for nuclear projects, with procurement specialists and managers required to rigorously abide by the company's Corporate Governance Manual (161).

Holtec's relevance to Greece is strengthened by two specific factors. First, Holtec was the implementer of the FIRST programme-funded SMR classroom simulator delivered to Kazakhstan, demonstrating its active engagement with the US government's civil nuclear cooperation architecture, an architecture in which Greece is now seeking to position itself. Second, Holtec is progressing the SMR-300 through the UK's Generic Design Assessment process, with the step 2 fundamental assessment running from August 2024 through March 2026, and is actively building its European industrial partnership base. The DOE Tier 1 First Mover Award of USD 400 million to Holtec for the Pioneer Units 1 and 2 at Palisades includes milestone-based cost-share support specifically intended to advance supply-chain mobilisation, with Holtec's proposal incorporating a multi-site fleet-scale deployment model designed to drive down costs through standardisation and manufacturing efficiency (162). The supply chain mobilisation component of this award will create procurement opportunities that extend beyond the US, particularly for specialised services, inspection, and balance-of-plant components where European suppliers with established quality credentials are competitive.

6.3.5 Proposed Greek Nuclear Supply Chain Qualification Programme

The individual qualification pathways described in the preceding sections, ISO 19443, ASME N-stamp, and vendor-specific approval, share a common dependency: they require upfront investment by individual companies in quality system development, staff training, external consultancy, and certification fees, with a return that is contingent on winning supply chain contracts that are, in turn, contingent on having the qualification. This chicken-and-egg problem, companies will not invest in qualification without contract visibility, and vendors will not provide contract visibility to unqualified companies, is the central market failure that a national qualification support programme must address. Without government co-financing and coordination, the qualification gap will persist not because Greek companies are incapable of meeting nuclear standards, but because the upfront cost of demonstrating that capability exceeds what individual SMEs can absorb without assured demand.

The proposed Greek Nuclear Supply Chain Qualification Programme, referred to hereafter as GR-NSCQP, is structured as a four-phase national initiative, co-financed under the ERDF and Cohesion Fund through the 2021-2027 ESPA (National Strategic Reference Framework), and coordinated by Enterprise Greece in partnership with EEAE, the Ministry of Environment and Energy, and the Hellenic Federation of Enterprises (SEV). Its design draws on analogous programmes in Finland, where the Finnish nuclear supply chain was developed around the Olkiluoto 3 EPR programme with active government co-financing of supplier qualification. And in the United Kingdom, where the Nuclear Decommissioning Authority and the Nuclear Industry Association have operated qualification support programmes for new entrants since 2012. And in Ghana, where the FIRST programme-funded welding certification initiative established under a memorandum of understanding with the International Science and Technology Center has demonstrated the viability of a government-structured, vendor-supported qualification programme in a country with no prior nuclear manufacturing history.

Phase 1: Supply Chain Readiness Assessment (Year 1)
The first phase of GR-NSCQP is a systematic, company-level assessment of the Greek industrial base against the qualification requirements of the four most relevant SMR vendors, NuScale, Rolls-Royce SMR, GEH, and Holtec, and the generic requirements of ISO 19443. Enterprise Greece, acting as the programme coordinator, commissions a structured audit of candidate Greek companies across five sectors: precision engineering and machining; heavy

fabrication and pressure vessel manufacture; non-destructive testing and inspection; electrical and instrumentation; and specialist logistics and transport. The audit maps each company's current quality system maturity, identifies the specific gaps relative to ISO 19443 requirements, assesses the timeline and cost of closing those gaps, and categorises companies by their prospective supply chain tier and commodity group. The output is a Greek Nuclear Supply Chain Capability Register, a publicly accessible, vendor-readable database of Greek industrial capabilities and qualification status, modelled on the UK's nuclear supply chain capability mapping framework maintained by the Nuclear Industry Association.

Phase 2: Qualification Co-Financing Facility (Years 1–4)
The second phase establishes a dedicated co-financing facility, funded under the ERDF's SME competitiveness and industrial modernisation priorities, and administered through Enterprise Greece, to cover up to 50 percent of the documented costs of ISO 19443 gap analysis, system development, staff training, and certification body fees for qualifying SMEs, and up to 30 percent for larger industrial companies. Eligibility is conditioned on: ISO 9001 certification as a baseline; inclusion in the Greek Nuclear Supply Chain Capability Register; a written expression of interest from at least one SMR vendor or Tier 1 contractor confirming the company's target commodity; and a co-investment commitment from the applicant covering the balance of qualification costs. The co-financing facility is targeted at funding the certification of fifteen to twenty Greek companies in the first four years, creating the critical mass of certified suppliers needed to constitute a credible Greek nuclear supply chain cluster.

Phase 3: Vendor Engagement and Pilot Contracts (Years 2–5)
The third phase focuses on translating certification into commercial engagement. Enterprise Greece, in coordination with the Ministry of Environment and Energy and the Greek Embassy in London (for Rolls-Royce SMR and GEH) and the Greek Embassy in Washington (for NuScale and Holtec), organises an annual Greek Nuclear Supply Chain Mission, a structured delegational engagement that brings certified Greek companies into direct dialogue with vendor supply chain directors and Tier 1 procurement teams. The first mission is targeted at the Rolls-Royce SMR Supplier Conference and the GEH BWRX-300 European working group, with subsequent missions adapted to the procurement calendars of the live European programmes. The mission format is modelled on the UK's Supply Chain Excellence Programme delegational engagements, but with explicit geographic positioning of Greek companies as the natural hub supplier for Southeast European and Eastern Mediterranean deployment programmes.

Phase 4: ASME N-Stamp Pilot and Advanced Manufacturing Qualification (Years 3–7)
The fourth phase identifies the two or three Greek companies with the strongest manufacturing capability and the most direct pathway to Tier 1 or Tier 2 participation, most plausibly in the heavy fabrication and heat exchanger manufacturing sectors, given the existing capability base identified in Chapter 3, and co-finances the development of NQA-1-compliant quality assurance programmes and ASME N-stamp applications. This phase is explicitly longer-term and higher-cost than the ISO 19443 phases, and its success depends on Phase 2 having established the vendor relationships and pilot contract visibility that justify the N-stamp investment. The co-financing ratio for Phase 4 is proposed at 40 percent of documented N-stamp preparation costs, with the balance provided by the applicant company and, where applicable, by vendor co-investment under a preferred supplier development agreement.

The GR-NSCQP is an industrial investment programme with specific, measurable outputs: a target of fifteen ISO 19443-certified Greek companies by 2028, at least two Greek companies in active vendor qualification dialogue by 2029, and at least one Greek company holding an ASME N-stamp by 2032. These targets are conservative relative to the scale of the opportunity documented in Section 4.4 and achievable within the co-financing frameworks that EU industrial policy already makes available. What they require is a ministerial decision to initiate the programme, a programme office with a budget and a mandate, and the recognition that the qualification window for the first wave of European SMR supply chain contracts is already open.

6.3.6 The Regulatory Surveillance Gap

ISO 19443 certification addresses one side of the vendor qualification equation. It demonstrates that a company has implemented a quality management system meeting nuclear-specific requirements. It does not address the other side: the question of who is surveilling that company on behalf of a nuclear regulatory authority.

For any component or service designated as Important to Nuclear Safety (ITNS), SMR vendors operating under the oversight of established nuclear regulators, the NRC, ONR, or France's Autorité de Sûreté Nucléaire et de Radioprotection (ASNR), carry an obligation to verify not only that their suppliers hold the relevant quality certifications, but that those suppliers operate within a nuclear regulatory environment that provides independent surveillance and corrective action authority. In practice, this means a vendor's supply chain audit team will ask a prospective Greek supplier a question that ISO 19443 certification alone cannot answer: under which nuclear regulatory framework is this organisation surveilled?

For Greek companies, the honest answer at present is none. EEAE has radiation protection competence and operates effectively within its current mandate, but it does not have an established supplier oversight programme for power reactor supply chain participants, nor the experience base from which to build one rapidly. This is not a criticism of EEAE, it reflects the straightforward reality that supplier oversight programmes are developed in the context of operating reactor programmes, which Greece has not had. The consequence, however, is concrete: a Greek company that achieves ISO 19443 certification and approaches a vendor with ITNS-scope components will encounter a regulatory surveillance question that cannot be resolved by quality documentation alone.

This gap applies with varying intensity across the supply chain tier structure. For Tier 4 and Tier 5 roles, balance of plant, civil works, non-nuclear logistics, and inspection services outside the nuclear island, vendor surveillance requirements are less stringent and the absence of a domestic nuclear regulator with supplier oversight capability is a manageable limitation. For Tier 2 and Tier 3 roles, structural and mechanical balance of the nuclear island, primary and secondary circuit components, and safety-system-adjacent applications, the regulatory surveillance question becomes a genuine contractual barrier that qualification investment alone will not resolve.

The Regulatory Bridging Mechanism

The internationally validated response to this structural gap is a bilateral regulatory bridging arrangement, under which an experienced nuclear regulator provides supplier surveillance services in the country of the prospective supplier, operating under a formal agreement with the host country's regulatory authority. This is not a novel mechanism. The IAEA's INIR review framework explicitly contemplates bilateral regulatory cooperation agreements as a component of nuclear infrastructure development for newcomer states, and several countries have formalised such arrangements as a step toward building domestic regulatory capability.

For Greece, three bilateral regulatory arrangements are identified as candidate bridging mechanisms, assessed in order of practical achievability.

The first and most accessible candidate is a bilateral regulatory cooperation agreement between EEAE and Romania's CNCAN. CNCAN is an EU member state regulator with over 26 years of operational licensing and inspection experience, is currently engaged in the Doicești NuScale VOYGR-6 programme, the first SMR project to reach Final Investment Decision in the EU, and has explicitly positioned Romania as the Southeast European reference point for nuclear newcomer capacity-building. A formal EEAE-CNCAN bilateral under which CNCAN provides supplier surveillance services for Greek companies supplying nuclear-grade components to regional SMR projects would be achievable within the EU regulatory cooperation framework without new treaty obligations. It would simultaneously build EEAE's institutional capacity through structured knowledge transfer, a secondary benefit that makes the arrangement attractive to both parties. The CNCAN relationship should be the primary near-term target.

The second candidate is a bilateral arrangement with France's ASNR. This pathway is more institutionally demanding, ASNR is a larger and more complex body than CNCAN, and the demand on its capacity from France's own nuclear programme is substantial, but it is the most strategically coherent for the NuWard track specifically. If Greece accedes to the NuWard Coalition track, an EEAE-ASNR cooperation framework becomes a natural extension of that political commitment, providing the regulatory surveillance dimension for the Greek industrial companies whose supply chain participation is most likely to be within the NuWard programme.

The third candidate is a bilateral arrangement with the UK's ONR. ONR's experience with the Rolls-Royce SMR generic design assessment process makes it the most relevant regulator for Greek companies seeking qualification for that specific programme. An EEAE-ONR agreement, while outside the EU institutional framework, is achievable under existing bilateral UK-Greece relations and would be particularly relevant for SpectrumNDT and other NDT service providers whose most accessible near-term nuclear market may be the UK fleet rollout.

Implementation Pathway

The regulatory bridging mechanism is a parallel track to ISO 19443 certification. Greek companies should not defer certification investment pending the establishment of a bilateral agreement, the two processes have different timelines and different institutional owners. The recommended sequencing is: ISO 19443 gap analysis initiated immediately by the priority companies identified in Section 6.3.5; EEAE formal engagement with CNCAN at ministerial level by end-2026, targeting a bilateral cooperation MoU by mid-2027; and EEAE-ASNR discussions opened in the context of Coalition accession proceedings, with a cooperation agreement as a deliverable of the first two years of Coalition participation.

The regulatory bridging mechanism does not replace EEAE's own development programme. It provides the interim supplier surveillance capability that allows Greek industry to engage in ITNS-scope supply chain roles before EEAE has developed the full domestic supplier oversight infrastructure that a mature nuclear programme requires. The target state, EEAE with its own operational supplier oversight programme, remains the long-term objective, but it is a state that will take a decade or more to reach. The bridging mechanism ensures that the industrial qualification investment beginning now is not commercially stranded pending EEAE's institutional maturation.

Chapter 7. Strategic Recommendations

7.1 For the Greek Government

The recommendations that follow are addressed to the Greek government in its institutional capacity, meaning the Ministry of Environment and Energy as the lead ministry, the ministerial evaluation committee established following the Prime Minister's Paris statement of 10 March 2026, and the relevant inter-ministerial bodies. They are sequenced not by strategic importance, which is roughly equal across all five, but by the time horizon within which each can be initiated. The defining principle underlying all five is that supply chain participation and domestic deployment are separate decisions requiring separate preconditions, and that the former need not, and should not, wait for the latter.

7.1.1 Nuclear Supply Chain Participation as a National Industrial Priority

The most consequential single step the Greek government can take in the near term costs nothing in budgetary terms and requires no change to the National Energy and Climate Plan. That is a formal, ministerial-level declaration that participation in the global SMR supply chain is a strategic industrial objective for Greece, pursued as a matter of industrial policy regardless of any future decision on domestic nuclear deployment.

This distinction matters because it removes the single most important source of institutional paralysis. Greek industry, lenders, and SMR vendors will not invest in the qualification relationships, certification programmes, and commercial dialogue that supply chain entry requires if those investments are held hostage to a domestic deployment question that may not be resolved for a decade. A government declaration that supply chain participation is a stand-alone strategic priority, analogous to the decisions taken by Japan in offshore wind component manufacturing, or by Portugal in battery supply chains, provides the demand signal that makes individual company qualification investment rational, and provides the political licence that Enterprise Greece, the Hellenic Development Bank, and European funding bodies need to co-finance the associated qualification infrastructure.

The appropriate vehicle for this declaration is a government policy circular or ministerial decision (Υπουργική Απόφαση). Issued by the Ministry of Environment and Energy and co-signed by the Ministry of Development, designating nuclear supply chain participation as a priority sector under the national industrial strategy and instructing the relevant agencies, Enterprise Greece, the Hellenic Development Bank, and the Hellenic Atomic Energy Commission, to treat its facilitation as a mandate rather than an incidental activity. This step should be treated as the first output of the ministerial evaluation committee, achievable independently of and prior to any conclusions on the domestic deployment question.

7.1.2 Accede to the EU SMR Coalition

Action 8 of the EU SMR Strategy calls on interested Member States to establish an SMR Coalition to facilitate deep policy and regulatory cooperation around selected SMR designs (COM/2026/117, p.12). As established in Section 6.1.2 of this report, the Coalition has not yet been formally constituted: this is precisely the moment at which accession carries the greatest strategic value, as founding participants shape the working group structures, design-track priorities, and regulatory alignment frameworks that will govern deployment across Europe for the following decade.

Greece's accession requires no prior regulatory infrastructure, no industrial qualification, and no programme commitment. It requires a ministerial decision and a formal letter from the Ministry of Environment and Energy to DG ENER identifying Greece's intent to participate, and the design track or tracks, most plausibly NuWard, given the METLEN–Naval Group partnership and the bilateral nuclear technology cooperation declaration signed between Greece and France in April 2026, with which Greece wishes to engage. A preliminary technology orientation conclusion from the ministerial evaluation committee provides the natural domestic basis for this accession decision.

The timing imperative is unambiguous. The supply chain architecture of the first European SMR fleet will be substantially determined by the vendor relationships and regulatory frameworks established within the Coalition's founding working groups. Greece's absence from that architecture, compounded over successive procurement cycles, is a structural exclusion that becomes progressively harder to reverse.

7.1.3 National Nuclear Readiness Assessment

Greece does not yet have a comprehensive, government-commissioned assessment of its own industrial, regulatory, and institutional readiness for nuclear supply chain participation. The analysis presented in this report constitutes the first attempt to fill that gap, but it is an independent research document, not an instrument of government policy. A formal national assessment, conducted under the aegis of the ministerial evaluation committee with the participation of EEAE, Enterprise Greece, the Hellenic Federation of Enterprises (SEV), and relevant research institutions, would perform three functions that this report cannot.

First, it would provide a comprehensive and updatable baseline. A government-commissioned assessment can access company-level data, procurement information, and regulatory status information that independent research cannot, and can be updated on a defined cycle as the qualification landscape evolves. Second, it would produce the supply chain capability register, a structured, vendor-readable database of Greek industrial capabilities and qualification status, that Section 6.3.5 identifies as the first deliverable of the proposed Greek Nuclear Supply Chain Qualification Programme. Third, and most importantly for the government-to-government engagement that follows, it would provide the evidentiary foundation that FIRST programme engagement, USTDA grant applications, and EU SMR Alliance participation all require: a documented, credible national statement of where Greece stands and what it needs.

The institutional model for this assessment is established by precedent. The Baker McKenzie Nuclear Energy Readiness Index assessment commissioned for Poland in early 2025 (163), the IAEA Integrated Nuclear Infrastructure Review process (164) applied in over thirty countries, and the USTDA-funded feasibility study frameworks applied in Romania and Bulgaria all provide templates that Greece can adapt without starting from first principles (165). The IAEA's Milestones Approach, specifically its Phase 1 infrastructure assessment methodology (166), provides the most comprehensive and internationally recognised framework, and an IAEA Integrated Nuclear Infrastructure Review mission requested through EEAE would carry institutional credibility beyond any domestically commissioned assessment. The recommendation of this report is that both approaches be pursued simultaneously: a domestic rapid assessment within the committee's mandate, and a formal IAEA INIR request initiated in parallel.

7.1.4 FIRST Programme Engagement

The Foundational Infrastructure for the Responsible Use of Small Modular Reactor Technology programme represents the single most accessible and potentially most consequential instrument available to Greece for bridging the institutional and industrial gap between its current nuclear readiness position and the supply chain participation that the analysis in preceding chapters demonstrates is achievable. As established in Section 6.2, FIRST provides regulatory capacity-building, workforce development, feasibility study funding, and financing preparation support, precisely the combination of instruments that Greece's position requires, and it does so within a bilateral framework that leverages rather than creates afresh the established US-Greece strategic energy and security partnership.

Greece is not currently a FIRST partner country, and was not among the founding participants of the SPRING initiative launched in Warsaw in September 2025. That absence is the most immediate and specific institutional gap identified in this report, and it is among the easiest to begin closing. The operational entry point is a formal, ministerial-level letter from the Minister of Environment and Energy to the US Ambassador in Athens, expressing Greece's interest in FIRST programme participation. Referencing the Prime Minister's Paris statement of 10 March 2026 and the ministerial evaluation committee as evidence of political-level commitment, and requesting facilitation of a technical dialogue between EEAE, the Ministry, and the State Department's Bureau of International Security and Nonproliferation.

This letter requires no prior domestic deployment decision, no advanced regulatory framework, and no vendor partnership in place. It is a request for programme information and engagement scoping, the standard first step in every FIRST country activation, from Romania in 2019 to the Philippines in 2024. The USTDA feasibility study grant mechanism, which has provided the analytical foundation for the Romanian NuScale programme and the Bulgarian AP1000 process, is the natural follow-on instrument, and its terms are discussed in detail in Section 6.2.4. The DFC's existing USD 125 million investment in the Elefsina shipyard, the 3+1 Energy Ministerial framework, and the Alexandroupolis LNG partnership all constitute documented evidence of the bilateral relationship depth that FIRST's programme criteria require and that no other candidate country in the Southeast European peer group can match to the same degree.

7.1.5 Greek SMR Valley Designation

Action 6 of the EU SMR Strategy encourages Member States to designate certain areas as SMR Valleys, defined as "geographical zones focused on activities related to the manufacturing or assembly of SMRs" (COM/2026/117, p.8). The Strategy specifies that such designations can help streamline permitting procedures, improve access to financing, and foster innovation and business collaboration among local suppliers, with Member States empowered to establish supportive measures including tax incentives within the designated perimeter.

The case for designating the Skaramagkas-Elefsina industrial corridor as Greece's candidate SMR Valley is the strongest available to any southeast European Member State, and rests on a convergence of assets that no other candidate corridor in the region replicates in combination. The Elefsina shipyard, backed by a USD 125 million US Development Finance Corporation loan and a cooperation framework with Hanwha Ocean, provides the heavy fabrication and deep-water port infrastructure that SMR module manufacturing and maritime export logistics require. The Aspropyrgos and West Attica industrial zone adjacent to the corridor concentrates steel fabrication, civil engineering contractors, pipeline manufacturers, and logistics operators, companies that are, in several cases, already within a twelve-to-eighteen-month horizon of ISO 19443 qualification readiness. The motorway and port connections linking the corridor to Piraeus create a continuous logistics spine from fabrication to maritime export, with Piraeus providing access to the Eastern Mediterranean, Aegean, and Black Sea shipping lanes that serve the Southeast European nuclear project pipeline. The proximity of the National Technical University of Athens and the University of Piraeus provides the skilled workforce and research partnership dimension that Valley governance requires.

The practical steps required to advance this designation are two-fold. At the EU level, the Ministry of Environment and Energy, acting as the competent authority under the Net-Zero Industry Act, should prepare and submit a formal SMR Valley designation proposal to the European Commission's DG ENER and DG GROW, identifying the geographic perimeter, the participating industrial actors, the governance structure, and the supply chain capability case. At the national level, a ministerial decision is required to anchor the Valley within Greece's industrial policy framework and designate a coordinating body, most plausibly a joint structure involving the Ministry of Environment and Energy, Enterprise Greece, and EEAE, to manage the Valley's governance and interface with the Alliance's supply chain working group. The EU funding instruments that a Valley designation unlocks, InvestEU's nuclear guarantee window, the Innovation Fund's SMR deployment calls, the Euratom Research and Training Programme's supply chain research provisions, and the IPCEI mechanism for transnational industrial projects, represent a financing architecture of directly relevant scale. The window for early designation, before the supply chain geography for the first European SMR fleet is fixed by the investments of others, is open now.

7.2 For Greek Industry

The recommendations that follow are addressed to Greek industrial actors, manufacturing companies, engineering contractors, inspection services providers, logistics operators, and their representative associations, as well as to the financing institutions and academic bodies whose engagement is a prerequisite for translating industrial potential into commercial supply chain participation. They proceed from the same foundational principle as Section 7.1: supply chain entry does not require Greece to have decided to build a reactor. It requires Greek companies to decide, now, to begin the qualification journey that vendor procurement timelines demand.

7.2.1 ISO 19443 Sector-Specific Qualification Campaigns

ISO 19443 is the single most actionable step available to any Greek industrial company seeking to enter the SMR supply chain, and it is the step that must precede all others. As established in Section 6.3.2, the standard adds approximately 200 nuclear-specific requirements to the ISO 9001 baseline, covering nuclear safety culture, determination of items important to nuclear safety, material traceability, counterfeit and fraudulent item prevention, and enhanced documentation management, and can be audited simultaneously with ISO 9001 in a single certification cycle. For a company already operating under a mature ISO 9001 system, the realistic preparation timeline from gap analysis to certification is eighteen to thirty-six months, at a total investment typically in the range of €80,000 to €250,000 depending on company size and scope complexity. That investment is modest relative to the contract values that certification unlocks.

The qualification imperative applies differently across the four industrial sectors most immediately relevant to the Greek supply chain case, and each warrants a distinct campaign approach.

For NDT and inspection services, ISO 19443 certification is the most proximate available step, and the qualification pathway is shorter than in any other sector. Companies such as SpectrumNDT, whose advanced inspection capabilities are documented in Section 3.9, already operate under EN ISO 9712 personnel qualification standards, hold ISO 9001 certification, and carry out inspection work in safety-critical marine and energy environments. The incremental distance to ISO 19443 is principally one of documented nuclear safety culture, formal ITNS determination, and CFSI controls, system extensions rather than operational transformations. However, ISO 19443 certification addresses the quality management system of the organisation, not the nuclear-specific competence of individual personnel. For a first nuclear NDT contract, vendors and prime contractors will require demonstrated nuclear NDT experience within the executing team. A requirement that Greek NDT companies without prior nuclear project history will need to address through the strategic recruitment or secondment of personnel holding nuclear-specific qualifications such as ASNT Level III under nuclear qualification schemes or equivalent EN ISO 9712 nuclear sector endorsements. This is a standard entry condition that new-market NDT companies across Central and Eastern Europe have addressed through targeted hiring from the French, Finnish, and UK nuclear NDT workforce pools, and one that should be planned for in parallel with the

ISO 19443 qualification process rather than discovered after certification is achieved. Greek NDT companies that achieve ISO 19443 certification by 2028 will be positioned to compete for inspection and in-service testing contracts on the Romanian Cernavodă refurbishment programme, the Bulgarian Kozloduy Units 7 and 8 construction cycle, and the early European SMR construction programmes commencing in the early 2030s. The sector should treat this window as the most time-sensitive commercial opportunity identified in this report.

For heavy fabrication and precision manufacturing, encompassing the shipyard and steel fabrication sector anchored at Elefsina and Salamis, pipe and tube manufacturers led by Corinth Pipeworks, and cable manufacturers including Hellenic Cables, ISO 19443 certification represents the entry threshold for Tier 2 and Tier 3 supply chain participation in structural steel modules, secondary circuit piping, and balance-of-plant electrical systems. Corinth Pipeworks, whose ISO 9001-based quality management system is already calibrated to high-specification energy sector standards including ASME B31.12 hydrogen pipeline certification, presents the most technically advanced baseline in this category. The qualification campaign for this sector should be sequenced: ISO 19443 in the first phase, concurrent development of ASME NQA-1-compliant quality assurance programmes in the second phase, and N-stamp application in the third, timed to coincide with the procurement windows of the Kozloduy 7 and 8 programme and the Rolls-Royce SMR Czech Republic fleet in the early 2030s. The recommended sequencing mirrors the trajectory documented for comparable entrants in Poland and Finland: generic nuclear quality system first, specific vendor qualification second, pressure boundary certification third.

For civil and structural engineering contractors, GEK TERNA, INTRAKAT, AVAX, and their peer group, the qualification path is less certification-intensive but requires structured engagement with nuclear construction quality management frameworks, specifically ASME NQA-1 for construction quality assurance and the nuclear construction codes applicable to each vendor's design. These companies already operate under demanding EU procurement quality frameworks on RRF-funded infrastructure projects, and their experience with complex, multi-contractor energy infrastructure, power plants, LNG terminals, grid infrastructure, provides a directly relevant quality culture baseline. The near-term priority for this sector is not ISO 19443 certification per se, but documented engagement with the nuclear EPC quality frameworks of the vendors most active in Southeast Europe, combined with the formation of consortium structures with international nuclear EPC partners, following the Integrated Project Delivery model applied at Ontario Power Generation's Darlington BWRX-300 project, that position Greek civil contractors as credible partners rather than unknown subcontractors.
One practical distinction applies specifically to general construction and EPC contractors that is worth making explicit. Unlike ISO 19443 and the ASME N-stamp, which are third-party certifications issued by independent certification bodies, the nuclear quality assurance standards most relevant to construction contractors, NQA-1 in the United States and N299 and N286 in Canada, do not carry independent certification. Under these standards, it is the owner or the owner's representative, the utility or the project's owner's engineer, that comes in directly and audits the contractor's quality programme against their requirements, and then places the contractor on their approved suppliers list on the basis of that audit. For Greek EPC contractors, this means the qualification pathway is not primarily through a certification body but through direct engagement with the project owners of the live European SMR programmes, Nuclearelectrica for the Doicești project, the Kozloduy project owner for Units 7 and 8, and the relevant owner's engineer for whichever programme a Greek contractor is targeting. The practical implication is that attending the right industry forums and establishing direct relationships with owner organisations is not a supplementary activity for Greek EPC contractors, it is the qualification pathway itself *(Stakeholder Consultation: Louie Shoukas, Vice President, PCL Construction, June 2026, Written Exchange. [Cross-reference Appendix D])*.

For logistics and maritime operators, the qualification requirement is the least technically demanding but the most strategically significant given Greece's hub positioning. Port and maritime logistics providers serving nuclear programmes must demonstrate compliance with IAEA Safety Standards Series SSR-6 for the transport of radioactive material, and their quality management systems must document chain-of-custody, abnormal occurrence reporting, and emergency response procedures to nuclear-programme standards (167). Greek port operators, maritime logistics companies, and heavy-lift specialists should treat nuclear transport qualification as a natural extension of their existing competencies in hazardous cargo and complex out-of-gauge movement, a qualification investment whose commercial return extends across the full lifetime of the Southeast European nuclear cluster.

7.2.2 Engage SMR Vendor Supply Chain Programmes

Certification alone does not generate supply chain contracts. Vendor qualification, the process by which a specific SMR developer assesses, approves, and registers a company as an authorised supplier, is a parallel and equally necessary track. The three vendors most relevant to Greece's supply chain positioning each operate structured engagement mechanisms, and Greek companies should be active in all three simultaneously.

Rolls-Royce SMR operates the most open and explicitly documented supplier engagement architecture of any vendor active in the European market. Its Supplier Management System Requirements document, which sets out the quality management standards against which suppliers are assessed, is publicly available and structured around ISO 9001:2015, NQA-1, IAEA GSR Part 2, and ASME, with ISO 19443 explicitly acknowledged as the emerging standard for supply chain assessment. The entry point for new suppliers is the Rolls-Royce SMR Supplier Portal, through which companies register their commodity scope and capability profile, enabling the company's supply chain development team to match suppliers against programme requirements across its contracted orderbook: three UK units under the Great British Energy–Nuclear agreement, the Czech Republic fleet under the ČEZ Early Works Agreement, and the Swedish technology competition. Greek companies should register on the Supplier Portal now, before ISO 19443 certification is complete, to establish a presence in the vendor's supplier pipeline and initiate the technical dialogue that vendor qualification requires. The annual Rolls-Royce SMR Supplier Conference is the most productive single venue for that initial dialogue, and Greek participation should be coordinated through Enterprise Greece as part of the national supply chain missions recommended in Section 6.3.5.

GE Vernova Hitachi Nuclear Energy's BWRX-300 supply chain programme operates through a Qualified Supplier Group that is being assembled incrementally around the Darlington reference plant and the European deployment pipeline in Poland and Czechia. The European Commission has approved a BWRX-300 Project Working Group under the EU SMR Industrial Alliance, established by ORLEN Synthos Green Energy and GE Hitachi, with explicit objectives covering European supply chain development and the standardisation of technology licensing across EU countries. This Alliance working group is the structural entry point for Greek companies: Alliance membership, as described in Section 6.1.3, is open to any EU-affiliated organisation, requires no qualification threshold, and places members in direct institutional contact with the procurement structures of the BWRX-300 programme. Greek companies targeting GEH supply chain participation should register for Alliance membership through the Commission's single-market portal, designate the BWRX-300 Project Working Group as their primary engagement track, and establish a technical dialogue with GEH's European supply chain development team referencing the geographic proximity of Greek fabrication infrastructure to the Central and Southeast European deployment markets that the BWRX-300 is targeting.

Holtec International's SMR-300 programme is advancing through the UK Generic Design Assessment process and developing a European industrial partnership base through its agreement with Hyundai Engineering and Construction and its MoU with Hungary's MVM. Holtec's vertically integrated manufacturing model means its external supply chain requirements are concentrated at Tier 2 and Tier 3 for specialised components and services not covered by its own facilities, precisely the tiers most accessible to Greek entrants. Greek NDT companies, precision machining operators, and logistics providers should engage with Holtec's procurement team directly, referencing the FIRST programme institutional relationship that Greece is seeking to establish, and Holtec's own role as the implementer of the FIRST-funded SMR simulator in Kazakhstan, as evidence of shared institutional alignment. Holtec's DOE Tier 1 First Mover Award, which includes milestone-based supply chain mobilisation funding for the Palisades Pioneer Units, will generate procurement opportunities extending beyond the United States that European suppliers with established quality credentials are positioned to compete for.

X-energy's Xe-100 high-temperature gas-cooled pebble bed reactor represents a vendor relationship that warrants specific attention within Greek supply chain engagement strategy, both for its own programme merits and for the institutional connectivity it offers through Greece's existing stakeholder network. The Xe-100 is a 80 MWe factory-built unit designed for four-pack 320 MWe plant configurations, advanced through the US Department of Energy's Advanced Reactor Demonstration Programme award, and is the most commercially advanced HTGR design in the Western market (168). The programme's lead deployment project, a four-unit Xe-100 plant for Dow Chemical at its Seadrift, Texas facility, is progressing toward construction (169). A second project, the Energy Northwest Columbia Generating Station site in Washington State, further extends the programme's deployment pipeline (170). X-energy has been active in international market development, with expressions of interest from multiple European and allied country utilities, and the company's factory-built manufacturing model, modular, serially produced, amenable to staged deployment, aligns directly with the supply chain logic that makes Greek heavy fabrication and precision manufacturing assets relevant.

For Greek companies, the Xe-100 programme offers an entry pathway that is structurally distinct from the iPWR-dominated European pipeline. HTGR designs operate at higher temperatures and use different materials specifications than light water reactor designs, meaning that companies qualifying for Xe-100 supply chain roles are building capabilities that extend beyond the European SMR deployment market into industrial heat and hydrogen production applications, a market dimension that strengthens the commercial rationale for qualification investment beyond nuclear power generation alone. Greek companies targeting X-energy supply chain engagement should initiate direct contact with X-energy's supply chain development team, referencing the Elefsina corridor's fabrication infrastructure as entry point for the Xe-100's pressure vessel and heat exchanger component requirements.

For Greek companies and for the proposed Greek Nuclear Supply Chain Consortium, one specific near-term international engagement target warrants explicit identification in this roadmap. The World Nuclear Exhibition, held biennially in Paris and widely recognised as the largest international gathering of nuclear supply chain companies, utilities, vendors, and project developers, represents the most concentrated vendor and owner engagement opportunity available to Greek industrial actors within the roadmap's 2026-2031 window. The next edition is scheduled for December 2027. Attendance at WNE 2027, ideally as a coordinated Greek national presence through the Consortium rather than as individual uncoordinated company delegations, should be treated as a 2027 milestone in both the industry track and the international engagement track. The exhibition floor is where nuclear supply chain relationships are initiated, where approved vendor list conversations begin, and where owner organisations assess the industrial landscape of countries they may not yet be familiar with. A coordinated Greek presence at WNE 2027, presenting a unified capability profile through the Consortium, would be the most cost-effective single international engagement action available within the roadmap period *(Stakeholder Consultation: Louie Shoukas, Vice President, PCL Construction, June 2026, Written Exchange. [Cross-reference Appendix D])*.

7.2.3 Greek Nuclear Supply Chain Consortium

The single most important structural step that Greek industry can take, and one that no individual company can take alone, is the formation of a Greek Nuclear Supply Chain Consortium. This is a coordinating body that presents a unified Greek industrial interface to SMR vendors, EU institutions, and international financing bodies, and that manages the collective qualification, market intelligence, and commercial engagement functions that individual SMEs cannot sustain independently.

The case for a Consortium rests on a straightforward market reality. SMR vendors are managing global supply chain development programmes with limited relationship bandwidth. A vendor supply chain director evaluating Southeast European suppliers will engage more readily and more substantively with a single organised national industrial grouping, one that can map collective capability, coordinate qualification timelines, and commit to a coordinated market approach, than with a fragmented collection of individual company enquiries. The Consortium is not a commercial vehicle; it does not aggregate contracts or negotiate collectively on price. It is a coordination, qualification support, and market-interface body, analogous in function to the UK's Nuclear Industry Association's supply chain committee, Finland's FinNuclear industry grouping, or Poland's IGEOS Nuclear, each of which has played a demonstrably important role in structuring its national industry's engagement with the nuclear supply chain.

The Consortium's founding membership should draw on the companies and sectors identified throughout this report as most directly positioned for near-term supply chain entry: METLEN, ONEX Shipyards, Corinth Pipeworks, Hellenic Cables, SpectrumNDT, Salamis Shipyards, and the major civil engineering and EPC contractors, alongside the Hellenic Federation of Enterprises (SEV) and the relevant sectoral associations in shipbuilding, steel, and engineering. Its governance should be lean, a secretariat function, a technical committee, and an annual plenary, co-funded by member contributions and by Enterprise Greece's industrial development mandate. Its initial deliverables should be three in number: a Greek Nuclear Supply Chain Capability Register mapping member company capabilities against the tier structure of Section 2.4.5. A coordinated EU SMR Alliance registration for all member organisations, and an inaugural Greek Nuclear Supply Chain Mission to the Rolls-Royce SMR Supplier Conference and the GEH BWRX-300 European working group, establishing the Consortium's visibility as a credible national industrial grouping at the vendor level.

The Consortium also provides the institutional vehicle through which the national qualification support programme proposed in Section 6.3.5, the GR-NSCQP, can be most efficiently administered. A Consortium that holds the Greek Nuclear Supply Chain Capability Register, manages the co-financing facility for ISO 19443 certification, and coordinates vendor engagement missions is performing, at industry level, exactly the function that Enterprise Greece and the Ministry of Environment and Energy need to see organised before they can commit the policy and funding architecture that makes the programme work.

7.2.4 Leverage the METLEN–Naval Group and ONEX–Hanwha agreements

Greek industry's two most strategically significant assets in the vendor engagement process are not certifications or facilities, they are signed agreements. The METLEN–Naval Group strategic MoU, places Greece's largest industrial conglomerate within the institutional ecosystem of a NuWard co-developer at precisely the moment when that programme's supply chain is beginning to be structured for deployment-phase procurement. The ONEX–Hanwha Ocean cooperation agreement links Elefsina's heavy fabrication and deep-water port infrastructure to a South Korean conglomerate whose parent group operates within a national industrial culture of nuclear-grade quality management built through the KEPCO-led deployment of APR-1400 units domestically and in the UAE.

These agreements should be used actively and explicitly in every vendor qualification conversation, every EU institution engagement, and every financing dialogue that Greek companies and the Consortium undertake. They are the answer to the most common objection that Greek industry will encounter. "Greece has no nuclear track record", because they constitute documented evidence of something more immediately relevant than a nuclear track record: they demonstrate that Greek industrial actors have already been assessed, approved, and contracted by two of the most demanding industrial standards organisations in the defence and energy sectors, and have performed at the quality level that those organisations require. In the language of the NEA's supply chain readiness framework, they are the "demonstrated industrial track record in directly adjacent disciplines" that constitutes the minimum evidential threshold for vendor qualification engagement.

METLEN should deploy the Naval Group relationship explicitly in its NuWard supply chain conversations, requesting programme intelligence briefings, attending NuWard consortium events, and proposing a nuclear-specific cooperation annex to the existing MoU that formalises METLEN's ISO 19443 qualification timeline as a shared programme objective. ONEX should leverage the DFC institutional relationship and the Hanwha partnership simultaneously in conversations with US-technology vendors, NuScale, GE Vernova Hitachi, and Holtec, framing Elefsina's qualification pathway as a strategic supply chain investment aligned with the US government's FIRST programme objectives and its broader commitment to building allied industrial capacity in Southeast Europe. The seventy-plus Greek companies in Naval Group's HIP network represent a broader proof point that should be systematically mobilised: the Consortium's capability register should identify the subset of HIP companies whose product scope is most directly applicable to nuclear balance-of-plant or structural roles, and support their ISO 19443 qualification as the highest-priority cohort within the GR-NSCQP.

7.2.5 Financing Architecture for First-Mover Qualification Investment

The market failure at the centre of Greek industry's qualification challenge is structural and well-defined: companies will not invest in nuclear supply chain qualification without contract visibility, and vendors will not provide contract visibility to unqualified companies. Breaking this loop requires a financing architecture that socialises the upfront qualification cost and makes the investment rational before the domestic demand signal that would otherwise justify it. Multiple instruments exist at EU, bilateral, and national level to construct this architecture, and the optimal approach is to deploy them in a layered sequence rather than relying on any single channel.

A critical dependency must be stated before mapping that layered architecture: the EU instruments described below, the European Regional Development Fund (ERDF), the Cohesion Fund, InvestEU, and IPCEI, are real, legally available, and correctly identified as components of the financing picture. They are not, however, the first-dollar source. Each carries constraints that make it unsuitable as the instrument that initiates the qualification campaign. IPCEI requires a multi-country consortium, formal Commission notification under state aid rules, and a project maturity level that presupposes qualification activity has already commenced, it is an instrument for scaling an emerging supply chain, not seeding one. InvestEU requires a financial intermediary product to be designed, approved, and deployed by the Hellenic Development Bank, a process that is achievable but not immediate. ERDF and Cohesion Fund allocations, while available through the 2021-2027 ESPA, require programme-level coordination that takes time to establish.

The single most realistic first-dollar source for initiating ISO 19443 gap analysis across the three to five priority Greek companies identified in this report is a modest national allocation, in the range of €500,000 to €1 million, disbursed directly through the Hellenic Development Bank's existing industrial modernisation support lines or through a YPEN ministerial fund under the investment promotion legislation already in force. This allocation requires no EU-level approval and no multi-party consortium. It requires a ministerial decision designating nuclear supply chain qualification as a priority industrial activity, the same decision recommended in Section 7.1 as the government track's first output, and an instruction to the Hellenic Development Bank to open a call under its existing SME competitiveness programmes for nuclear qualification preparatory costs. This is the no-regrets first step. It is the action that makes every subsequent EU instrument application more credible, because it demonstrates that Greece has already committed national resources to the objective before seeking European co-financing. It should be treated as the 2026 deliverable for the financing track, not a later milestone conditional on EU instrument activation.

As a medium-term co-financing vehicle, activated once the national allocation has seeded the first qualification cycle and demonstrated measurable progress, the ERDF and the Cohesion Fund, administered through the 2021-2027 ESPA, provide the most scalable channel for expanding the programme beyond the initial cohort. The ERDF's SME competitiveness and industrial modernisation priorities provide a direct legal basis for supporting certification programmes that strengthen Greece's industrial competitiveness in advanced manufacturing, qualifications that ISO 19443 nuclear supply chain certification straightforwardly satisfies. The Cohesion Fund is the appropriate instrument for larger infrastructure investments, including the port and logistics upgrades central to the proposed SMR Valley designation. The recommended structure is a dedicated national sub-measure under the ERDF's competitiveness pillar. Administered by the Ministry of Development through Enterprise Greece, covering up to fifty percent of documented ISO 19443 gap analysis, system development, staff training, and certification body fees for qualifying SMEs, and up to thirty percent for larger industrial companies, conditional on a co-investment commitment from the applicant and documented vendor or Tier 1 contractor interest in their commodity scope.

For facility-level capital investments beyond the reach of the initial national allocation, dedicated quality management infrastructure, calibration equipment, and the longer-horizon ASME N-stamp preparation investments that Tier 2 manufacturing requires, the InvestEU programme's nuclear window is the appropriate instrument, with the Hellenic Development Bank engaged to develop a blended finance product once the national allocation has established the programme's credibility. The InvestEU programme's nuclear window, bolstered by the Commission's proposed additional €200 million top-up through 2028 under the EU SMR Strategy, is the most directly relevant EU instrument for larger capital investments in qualification infrastructure, facility upgrades, and the longer-horizon ASME N-stamp preparation investments that Tier 2 manufacturing participation requires. The Hellenic Development Bank, as InvestEU's national implementing partner, should be engaged immediately to develop a nuclear supply chain investment product within its existing SME and industrial modernisation financing lines, structured as a blended finance instrument combining InvestEU guarantee coverage with concessional Hellenic Development Bank lending.

The IPCEI mechanism is the most powerful but also the most demanding instrument in this architecture. It is appropriate as a third-phase instrument, after national allocation has seeded qualification and EU co-financing has scaled it, not as an entry point. A Greek SMR Valley IPCEI, linking Elefsina's heavy fabrication qualification programme to the component demand of the Romanian Doicești programme and the Bulgarian Kozloduy Units 7 and 8 project, would constitute one of the most analytically credible applications of that mechanism available to Greece. It combines a demonstrated industrial asset, a live transnational demand signal, and an EU policy priority explicitly endorsed in the SMR Strategy. The formation of such a proposal requires engagement with Romania's Nuclearelectrica and Bulgaria's BEH as co-sponsoring entities, and should be scoped in parallel with the USTDA feasibility study grant application recommended in Section 7.1.

The US Development Finance Corporation's existing relationship with Elefsina, the USD 125 million loan to ONEX documented in Section 3.10, provides a bilateral financing channel that no other Southeast European country can replicate at this facility. ONEX should engage DFC directly on the nuclear supply chain dimension of its facility development, framing ISO 19443 qualification and the longer-term N-stamp pathway as the next phase of the strategic industrial investment that DFC has already committed. DFC's mandate to combine development finance with US national security objectives, combined with the US government's simultaneous investment in SMR deployment through FIRST and the Ex-Im Bank's financing of the Romanian NuScale project, creates a natural institutional alignment between ONEX's qualification investment and DFC's programme objectives that should be made explicit in any financing conversation.

For Greek SMEs that are below the threshold of individually bankable qualification investments, the European Investment Bank's advisory platform and the Euratom Research and Training Programme's 2026-2027 work programme, which includes explicit provisions for SMR-related supply chain research and training, provide additional channels through which personnel certification costs, technical training, and consortium formation expenses can be co-financed. The EIB's Nuclear Alliance Working Group, established under the EU SMR Strategy, is the institutional interface through which Greek SME qualification financing needs should be channelled at European level.

7.2.6 Nuclear-Specific Workforce Development

The gap between Greece's general engineering workforce and the nuclear-qualified personnel that supply chain participation requires is real, and it cannot be closed through awareness campaigns or broad educational commitments. It requires targeted, technically specific interventions across three distinct professional levels, each with its own institutional home and financing mechanism.

At the technician and operator level, the priority is welding and fabrication qualification to ASME Section IX (171), and EN ISO 15614 nuclear codes, and NDT personnel certification to ASNT Level II and Level III under nuclear-specific qualification schemes such as the ASME Performance Demonstration Initiative. These certifications are held by individuals, not companies, and the investment is accordingly modest per person, typically €5,000 to €15,000 for an experienced welder or NDT technician moving to nuclear-grade certification, but must be pursued at sufficient scale, across sufficient companies, to constitute a credible qualified workforce pool rather than isolated individual achievements. The vocational training infrastructure of the Organisation for Vocational Education and Training (OEEK) and the sector-specific training centres of the Hellenic Federation of Enterprises provide the institutional vehicles; the FIRST programme's workforce development stream and the Euratom Research and Training Programme's 2026–2027 training provisions provide co-financing options that should be activated in parallel.

At the engineering level, the priority is nuclear safety analysis, radiation protection, and quality assurance engineering, the disciplines required to staff EEAE's expanding regulatory function, to provide nuclear QA management within qualifying companies, and to provide the analytical support that vendor qualification audits require. The National Technical University of Athens and Aristotle University of Thessaloniki, whose engineering faculties have the strongest existing foundation in relevant disciplines, should be engaged to establish nuclear engineering specialisation tracks within their mechanical and chemical engineering master's programmes, building on the existing relationship between NTUA and NCSR Demokritos. Bilateral agreements with the French CEA, which has indicated willingness to support partner countries' nuclear capacity-building, and with the IAEA Nuclear Technology Academy, provide the international curriculum and faculty partnership dimension that a credible new programme requires.

At the senior professional and regulatory level, the most efficient investment is structured secondment: placing Greek engineers in residence at operating nuclear supply chain companies in France, the United Kingdom, Finland, and South Korea for periods of six to twenty-four months, returning with direct nuclear project experience that cannot be acquired domestically in the current period. The IAEA's Technical Cooperation Programme (172), the Euratom Research and Training mobility provisions, and the bilateral nuclear cooperation frameworks that the April 2026 Greece-France declaration makes available are all channels through which such secondments can be funded and institutionally structured. The target is a cohort of fifty to one hundred Greek nuclear-qualified engineers within five years, a number that is ambitious relative to the current baseline but achievable within the funding architecture described, and that would constitute a meaningful contribution to both the regulatory and industrial workforce requirements that a supply chain programme demands.

7.2.7 De-Risk First-Mover Industrial Investments

The companies that move first, beginning ISO 19443 qualification before a domestic Greek nuclear programme provides the demand signal, engaging vendor supply chain programmes before a contract is visible, investing in nuclear-grade facility upgrades before a purchase order is in hand, face a genuine first-mover risk that the financing architecture alone cannot eliminate. Government policy has a specific and bounded role to play in de-risking these investments through instruments that do not require public procurement commitments or deployment decisions.

The most effective instrument is the qualification grant with output conditionality: a non-repayable co-financing contribution, structured under the ERDF sub-measure described above, conditional on the company achieving ISO 19443 certification within a defined timeline and demonstrating documented vendor engagement within twelve months of certification. This structure converts the qualification investment from a speculative outlay into a conditionally subsidised programme cost, shifting the risk calculus for SMEs that would otherwise be unable to justify the investment on commercial grounds alone. The conditionality ensures public money is tied to outputs, certifications achieved, vendor relationships established, rather than intentions.

One dimension of the first-mover financial risk that the qualification grant instrument alone does not address requires specific acknowledgement. The primary financial exposure for a company that has successfully achieved nuclear-grade certification is not the initial qualification investment, it is the cost of maintaining certification through recertification cycles during periods when no nuclear contracts have yet materialised. Under ASME certification requirements, recertification is required every three years regardless of whether the company has performed nuclear work in the intervening period. A Greek company that achieves ISO 19443 certification and ASME qualification and then fails to win a nuclear supply chain contract within two to three years faces a recertification cost with no nuclear revenue to offset it, precisely the scenario that causes certified companies to walk away from the nuclear market and lose the qualification investment entirely. This is not a theoretical risk. It is the documented pattern that caused the global nuclear supply chain to contract sharply during the post-1990 construction hiatus in North America and Western Europe, when qualified manufacturers faced exactly this recertification-without-revenue dynamic and made the rational commercial decision to exit the market.

The de-risking architecture must therefore address the recertification cycle explicitly, not only the initial qualification cost. The recommended instrument is a recertification bridge facility, administered through the Hellenic Development Bank, providing concessional financing to cover recertification costs for Greek companies that have achieved nuclear-grade certification but have not yet secured a nuclear supply chain contract. The facility would operate on a two-cycle maximum, covering one recertification period of three years, with eligibility conditioned on documented evidence of active vendor engagement and at least one formal bid submission during the preceding certification period. This time-limits the public exposure while ensuring that companies that are genuinely pursuing nuclear work are not forced to abandon their qualification investment at the point closest to commercial realisation.

The second instrument is the first supply contract guarantee: a mechanism under which the Hellenic Development Bank, drawing on InvestEU guarantee coverage, provides credit support to a Greek company that has achieved ISO 19443 certification and is pursuing its first nuclear supply chain contract, covering the working capital requirements of that contract's pre-delivery period. Nuclear supply chain contracts carry extended payment cycles, demanding quality documentation requirements, and front-loaded qualification costs that create cash flow challenges for companies without prior nuclear project experience. A guarantee instrument that bridges these cash flow gaps, analogous to the UK's Nuclear Sector Deal supply chain strategy, removes the working capital barrier that would otherwise prevent a qualified company from converting its certification into a commercial contract (173).

The third instrument is consortium-based risk pooling: the structure through which the Greek Nuclear Supply Chain Consortium described earlier de-risks individual member investments by aggregating demand signals, coordinating qualification timelines, and presenting vendors with a group qualification proposal rather than an individual one. A vendor that can qualify ten Greek companies in a single coordinated audit campaign with shared documentation frameworks, common safety culture training, and a single-interface commercial interlocutor, will engage more readily with the qualification process than one facing ten separate, uncoordinated company applications. The Consortium's role in de-risking first-mover investment is therefore not merely reputational; it is structurally financial, reducing the per-company qualification cost and increasing the probability of vendor engagement in a way that individual company action cannot replicate.

Taken together, these five instruments, the qualification grant, the first contract guarantee, the Consortium risk pool, the InvestEU blended finance product, and the DFC engagement, constitute a de-risking architecture that is proportionate to the scale of the first-mover challenge and grounded entirely in instruments that are within the institutional capacity of the current Greek government to activate. They do not require a nuclear programme. They require a policy decision that the supply chain opportunity is worth protecting.

7.3 Proposed Roadmap: 2026–2030

The roadmap that follows translates the recommendations of Sections 7.1 and 7.2 into a structured, time-sequenced action plan organised by actor rather than by phase. This reflects the operational reality of how supply chain positioning actually works: the government track, the industry track, and the international engagement track do not proceed sequentially, they must advance in parallel, with each track creating the enabling conditions that the others depend upon. A government Coalition accession that is not accompanied by industry qualification investment generates no supply chain contracts. An industry certification programme that is not anchored by a government policy signal will not attract the co-financing that makes it commercially rational. An international engagement that is not backed by a domestic institutional framework will not be taken seriously by the vendors and institutions it is seeking to engage.

The roadmap acknowledges that the starting point is not a clean slate. As of mid-2026, several of the foundational triggers identified in this report have already fired. Prime Minister Mitsotakis delivered his landmark nuclear statement at the 2nd Nuclear Energy Summit in Paris on 10 March 2026, and the EU SMR Strategy was published the same day.The bilateral nuclear technology cooperation declaration between Greece and France was signed during President Macron's state visit to Athens in April 2026, and the ONEX–Hanwha cooperation agreement was formalised in February 2026. These events constitute the political and institutional context within which the roadmap begins, not milestones still to be achieved. The clock is already running. The roadmap reflects where Greece actually stands in mid-2026 and what must happen next, not what should have happened at the beginning of the year.

The five-year horizon to 2031 is chosen deliberately. The EU SMR Strategy targets first European SMR units operational by the early 2030s. The Romanian Doicești project is targeting its first module in commercial operation in 2033. The Bulgarian Kozloduy Units 7 and 8 Final Investment Decision is expected in the second half of 2026, with construction mobilisation to follow. The Rolls-Royce SMR fleet under the Great British Energy–Nuclear contract and the Czech Republic ČEZ programme are both targeting early 2030s deployment. These are the procurement windows within which Greek supply chain participation must be established if it is to be part of the first European SMR construction cycle. A country that has not achieved ISO 19443 certification, established vendor relationships, and demonstrated institutional commitment by 2029 will find the supply chain architecture of that first cycle already fixed. The 2031 endpoint of this roadmap is the outer boundary of the window within which Greece's position in the first European SMR supply chain generation must be secured.

7.3.1 Government Track

The government track is the enabling layer for everything else. Without a formal policy signal, industry qualification investment remains speculative. Without Coalition accession, Greece is absent from the institutional architecture that will determine deployment frameworks. Without FIRST programme engagement, Greece lacks access to the regulatory and workforce development infrastructure that a newcomer nuclear state requires. The government track is therefore front-loaded: the most consequential actions fall in the 2026–2027 period, and delay compounds at every subsequent stage.

In the remainder of 2026, the immediate priority is the issuance of a ministerial decision formally recognising nuclear supply chain participation as a national industrial priority, distinct from and independent of any domestic deployment decision. This decision, achievable within the current parliamentary mandate without legislative change, provides the policy signal that makes every subsequent action, co-financing, agency mandates, bilateral engagement, institutionally coherent rather than ad hoc. Simultaneously, the ministerial evaluation committee should deliver its preliminary technology orientation conclusion, identifying the SMR design tracks, that Greece will associate itself with for the purposes of EU-level coordination. This conclusion is the domestic prerequisite for Coalition accession and should be treated as the committee's first substantive output rather than a conclusion held until a broader deployment assessment is complete. Greece should also formally sign the Declaration to Triple Nuclear Energy before the end of 2026, removing the most visible gap in its international nuclear positioning at minimal political cost.

In the first half of 2027, the Ministry of Environment and Energy should submit Greece's formal accession letter to the EU SMR Coalition through DG ENER, designating the NuWard track as Greece's primary engagement and requesting observer status for EEAE in the Coalition's joint early design review process. This accession, achievable within weeks of the ministerial decision to proceed, places Greece inside the institutional architecture of European SMR deployment at the earliest stage at which founding participant status remains available. In parallel, the Minister of Environment and Energy should dispatch a formal letter to the US Ambassador in Athens initiating the FIRST programme engagement sequence described in Section 6.2.5, referencing the Paris statement, the Athens agreements, and the DFC–ONEX relationship as the bilateral foundation for that engagement. Neither of these actions requires a deployment decision, a regulatory framework, or an industrial qualification programme to be in place. They require political will and a letter.

Through 2027 and into 2028, the government track shifts from signalling to institution-building. EEAE requires a dedicated capacity development programme, staffing, international secondments, and bilateral regulatory partnership agreements, structured around the Coalition's regulatory workstream and the IAEA Integrated Nuclear Infrastructure Review process. A formal IAEA INIR request should be submitted through EEAE no later than mid-2027, initiating the internationally recognised infrastructure assessment process that provides the credibility baseline for all subsequent bilateral and vendor engagement. The national nuclear readiness assessment recommended in Section 7.1 should be completed and published by end-2027, providing the supply chain capability register that the proposed GR-NSCQP requires as its first deliverable. The SMR Valley designation proposal for the Skaramagkas-Elefsina corridor should be prepared and submitted to DG ENER and DG GROW by mid-2028, timed to coincide with the Commission's expected implementation of the Net-Zero Industry Act's strategic project designation mechanism.

From 2028 onward, the government track transitions into a facilitation and monitoring role: tracking the qualification progress of Greek industrial companies against the GR-NSCQP milestones, managing Greece's active participation in the Coalition's working groups, and ensuring that the InvestEU, Innovation Fund, and Euratom Research and Training Programme financing channels are being actively accessed by Greek institutional actors. The USTDA feasibility study, if initiated in 2027 as recommended, should deliver its outputs by mid-2029, providing the government with a rigorous, US-government-validated assessment of Greece's supply chain readiness and domestic deployment optionality that can inform any programme decision in the 2030s.

7.3.2 Industry Track

The industry track is where supply chain participation is actually created or lost. Government policy creates the enabling conditions; industry action creates the commercial reality. The industry track is accordingly the most operationally dense part of this roadmap, and the one where delay is most immediately costly, because the ISO 19443 certification cycle is measured in years, and those years are already running against the procurement timelines of the live European programmes.

The single most urgent industry action, executable immediately and independently of any government decision, is the initiation of ISO 19443 gap analysis by the Greek companies identified in this report as most immediately positioned for qualification. SpectrumNDT in the NDT and inspection sector; Corinth Pipeworks in precision pipe and structural manufacturing; Hellenic Cables in high-specification cable supply; ONEX Shipyards in heavy fabrication and module staging; and the relevant operating entities within METLEN's Sustainable Engineering Solutions division. Gap analysis does not require government co-financing to initiate, it requires a company decision. The co-financing architecture described in Section 7.2 reduces the net cost of the subsequent certification programme, but it does not need to be in place before the gap analysis begins. Companies that wait for the government financing framework to be established before beginning their qualification journey will lose twelve to eighteen months of preparation time that the procurement calendar of the first European SMR construction cycle does not allow.

The formation of the Greek Nuclear Supply Chain Consortium should be treated as a 2026–2027 deliverable, not a medium-term aspiration. The founding meeting of the Consortium, convened most naturally by SEV, with METLEN, ONEX, Corinth Pipeworks, Hellenic Cables, SpectrumNDT, Salamis Shipyards, and the major EPC contractors as founding members, should take place before the end of 2026 if possible, and no later than the first quarter of 2027. The Consortium's first deliverable, the Greek Nuclear Supply Chain Capability Register, should be completed and made available to vendor supply chain development teams by mid-2027. This register is the single most important commercial instrument the Consortium can produce: it converts Greece from an unknown quantity in vendor procurement databases into a mapped, documented, queryable supply chain landscape.

Vendor portal registration should proceed in parallel with gap analysis and Consortium formation, not after them. METLEN, ONEX, Corinth Pipeworks, and SpectrumNDT should all register on the Rolls-Royce SMR Supplier Portal in 2026, establishing their presence in the vendor's supplier pipeline before their ISO 19443 certification is complete. Registration costs nothing, commits to nothing, and initiates the commercial dialogue that vendor qualification requires. GE Vernova Hitachi's BWRX-300 Project Working Group under the EU SMR Industrial Alliance (159) should be the target for Consortium-level registration, with Alliance membership applications submitted for all major Consortium members by early 2027.

The first cohort of ISO 19443 certifications targeting SpectrumNDT, Corinth Pipeworks, and the ONEX quality management entity as the three most technically prepared candidates, should be achievable by end-2028, on the assumption that gap analysis is initiated in the second half of 2026 and that the ERDF co-financing sub-measure is operational by mid-2027. A second certification cohort, encompassing Hellenic Cables, Salamis Shipyards, and the first wave of HIP network companies identified through the Capability Register, should target completion by end-2029. By 2029, Greece should have a minimum of eight to ten ISO 19443-certified companies across the NDT, fabrication, cable, and logistics sectors, the critical mass required to constitute a credible national supply chain cluster in vendor conversations.

The first Greek Nuclear Supply Chain Mission, a coordinated delegational engagement bringing Consortium members into direct dialogue with Rolls-Royce SMR's supply chain development team and GEH's BWRX-300 European working group, should be organised for 2028, timed to follow the first ISO 19443 certifications and the publication of the Capability Register. This sequencing is deliberate: the Mission's purpose is not to introduce Greece to vendors but to present a qualified, documented Greek industrial cluster to vendors who have already been briefed through portal registrations and Alliance working group participation. The difference in reception between "we are interested in participating" and "here are our certified companies and their qualification scopes" is the difference between a courtesy meeting and a commercial conversation.

METLEN's ISO 19443 certification for its SES division, combined with a nuclear-specific cooperation annex to the Naval Group MoU formalising METLEN's qualification timeline as a shared programme objective, should be targeted for completion by end-2028. This milestone is the most strategically significant single industry action in the roadmap, because it converts the METLEN–Naval Group relationship from a defence industrial partnership with nuclear adjacency into a formally structured nuclear supply chain engagement, the first of its kind in Greek industry.

NQA-1 programme development, the intermediate step between ISO 19443 and ASME N-stamp certification, should be initiated by the two or three companies with the strongest manufacturing capability and the most direct Tier 2 pathway, most plausibly Corinth Pipeworks and the ONEX heavy fabrication entity, in 2029, following the consolidation of their ISO 19443 credentials and the establishment of vendor dialogue. N-stamp applications, representing entry into the highest-value tiers of nuclear component manufacturing, are realistically targeted for the 2031–2033 horizon, outside this roadmap's window but within the procurement timeline of the second European SMR construction wave that the EU SMR Strategy's 17 to 53 GW capacity projection by 2050 implies.

7.3.3 International Engagement Track

The international engagement track runs in parallel with both the government and industry tracks and is the dimension most directly affected by timing. The institutional architecture of European SMR deployment, the Coalition's working groups, the Alliance's supply chain register, the FIRST programme's regional engagement, the USTDA feasibility study pipeline, is being built now. Greece's influence over that architecture, and its visibility within it, diminishes with every month that its engagement is delayed.

The FIRST programme engagement sequence, initiated through the US Embassy Athens in the first half of 2027 as recommended in Section 7.1, should target the submission of a USTDA feasibility study grant application by end-2027. The grant application, structured around the three elements identified in Section 6.2.4, supply chain readiness assessment, regulatory gap analysis, and indicative siting screen, provides the US government with the evidentiary basis for deeper FIRST engagement while providing Greek institutional actors with the analytical outputs they need for credible programme decision-making in the 2030s. FIRST programme activation for Greece, formal partner-country status, should be targeted for 2028, following the grant application and the initial technical dialogue between EEAE, the Ministry, and the Bureau of ISN.

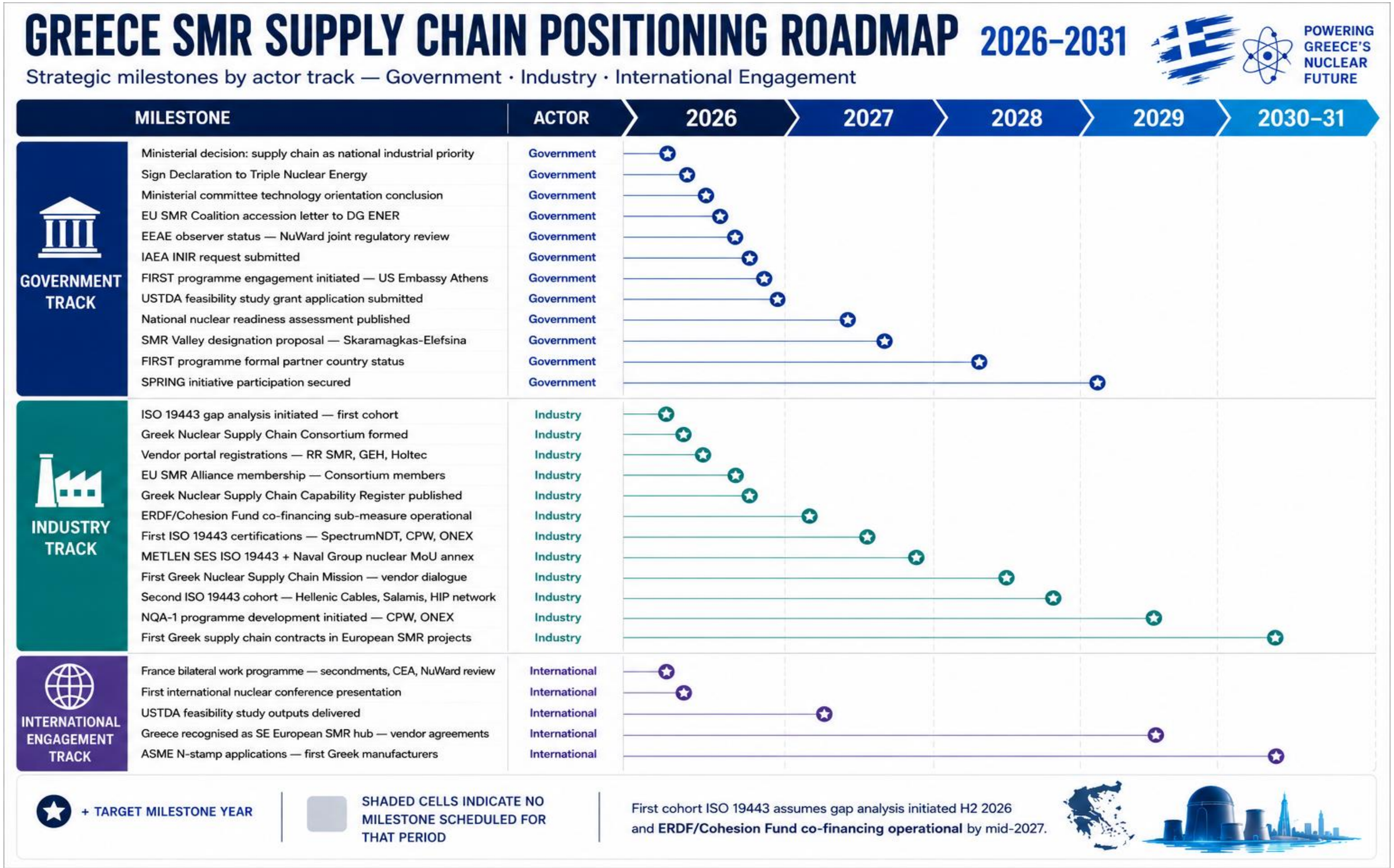
SPRING initiative participation, the SMR Pan-Regional Interest Nuclear Group launched in Warsaw in September 2025, should be sought as part of the FIRST activation process. Greece's absence from the thirteen founding participants is the most specific and visible gap in its US nuclear engagement architecture, and it should be closed at the earliest opportunity. SPRING participation places Greece in the same regulatory harmonisation and fleet deployment coordination framework as Romania, Bulgaria, Poland, and the other Central and Eastern European countries whose programmes will define the regional supply chain geography.

The bilateral nuclear cooperation framework with France, established through the April 2026 Athens declaration, should be operationalised through a specific work programme agreed between the Ministry of Environment and Energy and its French counterpart by end-2027. The most immediately actionable elements of this work programme are structured secondments of Greek engineers to the French CEA and to Naval Group's nuclear manufacturing facilities, and EEAE observer participation in the NuWard joint regulatory review process that is already engaging six European national regulators. Both of these actions generate concrete human capital and regulatory capacity outcomes that the domestic institution-building track requires, at no cost beyond the political decision to activate the framework that already exists.

Greece's first substantive international nuclear conference presentation, presenting the findings of this report or the national nuclear readiness assessment at a recognised international forum, should be targeted for 2027 or 2028. The most appropriate venues, in descending order of strategic value, are: the IAEA General Conference in Vienna; the Nuclear Energy Summit series; the South East Europe Energy Dialogue organised by IENE; and the WNA Symposium. Each reaches a different segment of the international nuclear community, and a sequenced presentation strategy, regional first, then global, builds Greece's profile progressively rather than requiring a single high-stakes debut.

7.3.4 Timeline Matrix

The table below summarises the roadmap's principal milestones by actor and year. Milestones marked as already initiated reflect actions triggered by the Paris statement, the Athens agreements, or the ONEX–Hanwha agreement of early 2026.


GREECE SMR SUPPLY CHAIN POSITIONING ROADMAP 2026–2031
Strategic milestones by actor track — Government · Industry · International Engagement
POWERING GREECE'S NUCLEAR FUTURE
MILESTONE
ACTOR
2026
2027
2028
2029
2030–31
GOVERNMENT TRACK
Ministerial decision: supply chain as national industrial priority
Sign Declaration to Triple Nuclear Energy
Ministerial committee technology orientation conclusion
EU SMR Coalition accession letter to DG ENER
EEAE observer status — NuWard joint regulatory review
IAEA INIR request submitted
FIRST programme engagement initiated — US Embassy Athens
USTDA feasibility study grant application submitted
National nuclear readiness assessment published
SMR Valley designation proposal — Skaramagkas-Elefsina
FIRST programme formal partner country status
SPRING initiative participation secured
Government
INDUSTRY TRACK
ISO 19443 gap analysis initiated — first cohort
Greek Nuclear Supply Chain Consortium formed
Vendor portal registrations — RR SMR, GEH, Holtec
EU SMR Alliance membership — Consortium members
Greek Nuclear Supply Chain Capability Register published
ERDF/Cohesion Fund co-financing sub-measure operational
First ISO 19443 certifications — SpectrumNDT, CPW, ONEX
METLEN SES ISO 19443 + Naval Group nuclear MoU annex
First Greek Nuclear Supply Chain Mission — vendor dialogue
Second ISO 19443 cohort — Hellenic Cables, Salamis, HIP network
NQA-1 programme development initiated — CPW, ONEX
First Greek supply chain contracts in European SMR projects
Industry
INTERNATIONAL ENGAGEMENT TRACK
France bilateral work programme — secondments, CEA, NuWard review
First international nuclear conference presentation
USTDA feasibility study outputs delivered
Greece recognised as SE European SMR hub — vendor agreements
ASME N-stamp applications — first Greek manufacturers
International
+ TARGET MILESTONE YEAR
SHADED CELLS INDICATE NO MILESTONE SCHEDULED FOR THAT PERIOD
First cohort ISO 19443 assumes gap analysis initiated H2 2026 and ERDF/Cohesion Fund co-financing operational by mid-2027.

Chapter 8. Conclusions

Small modular reactors are entering the public conversation in Greece primarily as an energy security question: should Greece build one, and if so, when and where? That framing, while understandable, misses the more immediate and in many ways, more consequential dimension of what the global SMR industry represents. SMRs are not only a new source of low-carbon baseload power. They are the nucleus of an entirely new industrial ecosystem, one that will generate advanced manufacturing capacity, high-skill employment, export revenue, and technological capability in the countries that position themselves early enough to participate in its construction. The energy security argument for nuclear is well rehearsed. The industrial argument, that Greece has a realistic, near-term opportunity to become a component of the global infrastructure through which SMRs are built, not merely a potential consumer of the power they produce, has received far less attention. This report has attempted to make that argument with the rigour and specificity it deserves.

The core finding is unambiguous. Greece's SMR supply chain participation is not a distant aspiration contingent on a domestic deployment decision that may be a decade away. It is a near-term, commercially viable opportunity that is available to Greek industrial actors now, through existing qualification pathways, existing vendor engagement mechanisms, and existing bilateral and multilateral frameworks, provided the necessary actions are taken within a window that is measured in months and years, not decades. The evidence assembled in the preceding chapters supports this conclusion across multiple dimensions. Greece's industrial base, concentrated in heavy fabrication, precision manufacturing, high-specification cable production, advanced NDT services, and maritime engineering, maps directly onto the Tier 2 and Tier 3 supply chain requirements of the SMR programmes most active in Southeast Europe. The METLEN–Naval Group partnership and the ONEX–Hanwha agreement are signed commercial frameworks that place Greece's two most strategically significant industrial actors inside the institutional ecosystems of two of the world's leading nuclear technology developers, at precisely the moment when those developers are structuring their European supply chains for deployment-phase procurement. The ISO 19443 qualification pathway, the concrete, actionable, costed first step for any Greek company seeking supply chain entry, is technically within reach of multiple Greek companies within an eighteen-to-thirty-six-month preparation horizon. The financing architecture to support that qualification investment exists, at EU, bilateral, and national level, and requires policy activation rather than new institutional invention.

What Greece currently lacks is not industrial capability, not geographic positioning, not bilateral relationships, and not financing instruments. What it lacks is the institutional coordination and the government policy signal that converts latent industrial potential into organised supply chain participation. The analysis in Chapters 5, 6, and 7 demonstrates that this gap is closable, and that the instruments required to close it, a ministerial declaration of supply chain participation as a national industrial priority, EU SMR Coalition accession, FIRST programme engagement, the formation of a Greek Nuclear Supply Chain Consortium, and the designation of the Skaramagkas-Elefsina corridor as an SMR Valley, are all within the institutional capacity of the current government and the current industrial leadership to initiate, independently of any decision on domestic deployment. The deployment question is real and will need to be answered in its own time, on its own evidential basis. But it is a separate question, and treating it as a prerequisite for supply chain engagement is the single most consequential strategic error that Greece could make in the present moment.

The Southeast European nuclear landscape confirms both the opportunity and the competitive pressure. Romania has moved from policy commitment to Final Investment Decision on the NuScale SMR programme in under four years. Bulgaria is approaching a Final Investment Decision on Kozloduy Units 7 and 8, with construction mobilisation to follow. Poland is advancing the GE Vernova Hitachi BWRX-300 programme with government-backed industrial partnership structures already in place. Each of these programmes represents a live procurement pipeline for the supply chain tier that Greek industry is positioned to enter. But each programme also represents a country that is structuring its domestic supply chain participation now, qualifying its companies, registering with vendor portals, and establishing the institutional relationships through which contracts flow. The Greek companies that are not in those conversations by 2028 will not be in the first contracts. The supply chain geography of the first European SMR construction cycle is being drawn now, and the lines, once drawn, are not easily redrawn.

The convergence of circumstances that makes this moment genuinely exceptional will not persist indefinitely. The EU SMR Strategy of March 2026 has established, for the first time, a comprehensive European institutional architecture for SMR deployment, the Coalition, the Industrial Alliance, the Valley designation mechanism, the InvestEU nuclear window, and has done so with explicit provision for new Member State participation at the founding stage. Prime Minister Mitsotakis's statement in Paris the same day, followed by the bilateral nuclear technology cooperation declaration with France in April, has created the political authorisation for Greek institutional actors to move. The ONEX–Hanwha agreement has created a concrete, funded, internationally credible heavy fabrication asset in Elefsina. These three elements, EU policy architecture, domestic political signal, and industrial anchor investment, do not often arrive simultaneously, and they have done so now.

The announcement of Project Trident at the US Ambassador's residence in Athens on 29 May 2026 is precisely the kind of foundational industrial commitment that the supply chain argument in this report requires, and its timing, concurrent with the finalisation of this analysis, validates both the urgency and the direction of the recommendations that precede it. Three governments have already decided that Elefsina is strategically significant. The nuclear qualification layer that converts that decision into SMR supply chain participation is the remaining step. The window they open is real. It is open. And it will not remain open indefinitely. The question for Greece is not whether the opportunity exists. The analysis in this report demonstrates that it does. The question is whether Greece will act with the speed and institutional purposefulness that the moment demands, or whether it will still be deliberating when the first European SMR supply chains are already built, contracted, and closed to new entrants.

Appendices

Appendix A: GIS Data Sources and Methodology

A.1 Software and Coordinate Reference System

All spatial analysis and map production were conducted using **QGIS version 3.44 Solothurn** (Open Source Geospatial Foundation). The project employed a dual CRS strategy:

Purpose	CRS	EPSG Code
National maps (Maps 1, 2, 4, 5)	GGRS87 / Greek Grid	EPSG:2100
Regional context (Map 6)	ETRS89 / LAEA Europe	EPSG:3035
Coordinate entry for manual points	WGS 84	EPSG:4326

Base map imagery was sourced via XYZ Tile services (OpenStreetMap Standard) for all maps.

A.2 Map 1: Industrial Infrastructure and Port Facilities

Data Sources

Data Layer	Source	Format	Acquisition Method
Port locations	OpenStreetMap	Point geometry	Manual identification via OSM base map; coordinates verified against Hellenic Statistical Authority (ELSTAT) port registry
Shipyard locations	OpenStreetMap / Corporate disclosures	Point geometry	Manual placement based on known facilities (Elefsina, Skaramangas, Salamis, Syros) cross-referenced with ONEX and Naval Group public announcements
Industrial zones	OpenStreetMap / Visual interpretation	Polygon geometry	Digitised from satellite imagery (OSM Standard XYZ tiles) covering major manufacturing clusters
Base map	OpenStreetMap XYZ tiles	Raster	https://tile.openstreetmap.org/{z}/{x}/{y}.png
Administrative boundaries	Geodata.gov.gr (Hellenic Cadastre)	Shapefile	Downloaded from official Greek open geospatial portal

Methodology

Ports Layer
Five major Greek ports were selected based on their relevance to SMR supply chain logistics: Piraeus, Elefsina, Thessaloniki, Volos, and Alexandroupoli. Selection criteria included: (a) deep-water berth capacity, (b) heavy-lift handling capability, (c) proximity to industrial zones, and (d) strategic position within Southeast European logistics corridors. Points were manually digitised using the OSM Standard base map as reference, with coordinates recorded in EPSG:2100. An attribute field "name" was added to store port identifiers.

Shipyards Layer
Four strategic shipyard facilities were mapped: Elefsina Shipyard (ONEX, subject to US DFC $125 million loan), Skaramangas Shipyard (Prokopiou group), Salamis Shipyard (Naval Group collaboration partner for FDI frigate programme), and Neorion Shipyard (Syros). Placement was confirmed using satellite imagery and cross-referenced with corporate announcements and the Hellenic Industrial Participation register.

Industrial Zones Layer
Three industrial agglomerations were delineated as polygons: the Elefsina-Aspropyrgos Industrial Corridor (Athens west coast), Sindos Industrial Zone (west of Thessaloniki), and Volos Industrial Zone (east of Volos port). Polygons were created using the QGIS “Add Polygon Feature” tool, tracing visible industrial infrastructure (aggregations of grey/silver roofing, storage facilities, and logistics infrastructure) visible on OSM satellite base imagery at zoom levels 12-14.

Cartographic Styling

Feature	Symbol	Color	Size	Label
Major ports	Ship icon (Font Marker, Webdings)	Dark Blue	6	name (9pt, offset 2.5mm)
Shipyards	Star (Simple Marker)	Red	6	name (9pt, offset 2mm)
Industrial zones	Polygon fill	Dark Grey	—	name (8pt, 50% transparency)

Key Industrial Facilities (Steel, Cables, Pipes)
Data Sources:

Data Layer	Source	Format	Acquisition Method
Corinth Pipeworks (Thisvi)	Corporate disclosure / Geodata.gov.gr	Point geometry	Manual digitisation based on published facility location
Hellenic Cables (Corinth)	Corporate disclosure / OpenStreetMap	Point geometry	Manual digitisation based on published facility location
Hellenic Cables (Thiva)	Corporate disclosure / OpenStreetMap	Point geometry	Manual digitisation based on published facility location
Sidenor Steel (Thessaloniki)	Corporate disclosure / OpenStreetMap	Point geometry	Manual digitisation based on Sindos industrial zone location
Sidenor Steel (Almiros)	Corporate disclosure / OpenStreetMap	Point geometry	Manual digitisation based on published facility location

Methodology:
Five strategically significant industrial facilities were added to Map 1 to represent Greece's manufacturing capabilities relevant to SMR supply chains. Selection criteria included: (a) production of components with direct SMR supply chain relevance (steel pipes, high-voltage cables, structural steel), (b) existing international quality certifications (e.g., ASME B31.12 for Corinth Pipeworks), and (c) demonstrated capacity for large-scale energy infrastructure manufacturing.

Facility	Location	SMR Supply Chain Relevance
Corinth Pipeworks	Thisvi, Viotia	Large-diameter welded steel pipes (LSAW/HSAW) for primary/secondary circuits; ASME B31.12 hydrogen-certified
Hellenic Cables (Corinth)	Isthmia, Corinth	High-voltage submarine and onshore cables for grid interconnection
Hellenic Cables (Thiva)	Thiva, Viotia	Medium/high-voltage underground cables for balance-of-plant electrical systems
Sidenor (Thessaloniki)	Sindos, Thessaloniki	Steel long products (rebar, wire rod) for civil works and structural reinforcement
Sidenor (Almiros)	Almiros, Volos	Steel long products for secondary fabrication and regional supply

Points were digitised using the OSM Standard base map as reference, with coordinates recorded in EPSG:2100. An attribute table was created with fields: name (facility name), company (parent company), and product (primary manufactured product). Styling: black circle marker with yellow/white stroke (size 5 units) to distinguish from port (blue ship icons) and shipyard (red star) symbologies. Labels were applied using the name field (8pt, dark grey, offset 2mm).

Citation Note: Facility locations were cross-referenced with corporate publications from Cenergy Holdings (Hellenic Cables annual reports), Viohalco (Sidenor facility disclosures), and Corinth Pipeworks project documentation.

Transport Infrastructure (Highways and Rail)
Data Sources:

Data Layer	Source	Format	Acquisition Method
Major highways (motorway, trunk)	OpenStreetMap via Overpass Turbo	Line geometry (GeoJSON)	Query: way["highway"="motorway"](area.searchArea); way["highway"="trunk"](area.searchArea);
Rail network (rail, subway)	OpenStreetMap via Overpass Turbo	Line geometry (GeoJSON)	Query: way["railway"="rail"](area.searchArea); way["railway"="subway"](area.searchArea);

Overpass Turbo Queries:
The following Overpass QL queries were executed on 25 May 2026 via the Overpass Turbo API (https://overpass-turbo.eu):

For Highways:
sql
```
[out:json][timeout:90];
{{geocodeArea:Greece}}->.searchArea;
(
  way["highway"="motorway"](area.searchArea);
  way["highway"="trunk"](area.searchArea);
);
out body;
>;
out skel qt;
```

For Railways:
sql
```
[out:json][timeout:90];
{{geocodeArea:Greece}}->.searchArea;
(
  way["railway"="rail"](area.searchArea);
  way["railway"="subway"](area.searchArea);
);
out body;
>;
out skel qt;
```

Methodology:

Transport infrastructure was added to Map 1 to illustrate logistics connectivity between industrial facilities, ports, and regional markets, a critical dimension of supply chain suitability analysis.

Highways (Motorways and Trunk Roads):
The extracted line layer was styled with red solid lines (width 1.0 mm for national maps, 1.5 mm for detail maps) to represent major road corridors capable of accommodating heavy transport (e.g., oversized SMR components, steel pipes, cable drums). Key routes include the A1 (Athens–Thessaloniki–Evzonoi), A2 (Egnatia Odos, West–East across northern Greece), A8 (Athens–Corinth–Patras), and A90 (Crete north coast).

Rail Network:
The railway layer was styled with black dashed lines (width 0.6 mm for national maps, 0.8 mm for detail maps) to distinguish from road infrastructure. The Greek rail network connects major industrial centres (Athens, Thessaloniki, Volos) to port facilities and Balkan/EU rail corridors, providing alternative logistics routing for bulk materials.

Cartographic Integration:
Both transport layers were positioned below port, shipyard, and industrial facility layers but above the base map to ensure infrastructure visibility without obscuring point features. In legend, highways and railways were labelled as "Major Highways / Motorways" and "Rail Network" respectively.

Limitation Acknowledged:
OpenStreetMap railway data for Greece may underrepresent secondary and regional rail lines. The analysis focused on mainline passenger and freight corridors sufficient for strategic supply chain assessment. For granular logistics modelling, additional data from Hellenic Train (formerly TRAINOSE) or ERGOSE would be required.

Print Layout
A4 landscape orientation. Components included: title (Map 1: Greece's Industrial Infrastructure and Port Facilities), legend (renamed layers: "Major Ports", "Shipyards / Heavy Fabrication", "Industrial Zones"), scale bar (kilometres), north arrow, and map frame. Export resolution: 300 dpi PNG. Three additional detail maps (Map 1a: Elefsina-Aspropyrgos Corridor; Map 1b: Thessaloniki-Sindos Area; Map 1c: Volos Area) were produced using identical styling at larger scale (approximately 1:100,000).

A.3 Map 2: Energy Grid Infrastructure

Data Sources

Data Layer	Source	Format	Acquisition Method
High-voltage transmission lines (400kV, 150kV)	OpenStreet Map (via Overpass Turbo)	Line geometry (GeoJSON)	Query: way["power"="line"]["voltage"~"150|400"](area.searchArea)
Substations	OpenStreet Map (via Overpass Turbo)	Point geometry (GeoJSON)	Query: node["power"="substation"](area.searchArea)
Revithoussa LNG Terminal	Known location (Megara, West Attica)	Point geometry	Manual digitisation; cross-referenced with DESFA public data

Alexandroupolis FSRU	Known offshore location	Point geometry	Manual digitisation; cross-referenced with Gastrade project announcements
Base map	OpenStreetMap XYZ tiles	Raster	Same as Map 1

Overpass Turbo Query Methodology
The following Overpass QL query was executed on 9 May 2026 via the Overpass Turbo API (https://overpass-turbo.eu):

```
[out:json][timeout:90];
{{geocodeArea:Greece}}->.searchArea;
(
  way["power"="line"]["voltage"~"150|400"](area.searchArea);
  node["power"="substation"](area.searchArea);
);
out body;
>;
out skel qt;
```

The resulting GeoJSON was imported into QGIS via Layer > Add Layer > Add Vector Layer.

Methodology
Power Lines Styling (Rule-based Symbology):

Voltage	Filter Expression	Line Color	Line Width (mm)
400 kV	"voltage" = 400000	Bright Red	1.2
150 kV	"voltage" = 150000	Orange	0.8

Substations Layer
Nineteen major transmission substations were identified from the OSM extract. Styling: square marker, dark orange fill, black stroke (width 0.5), size 5 units.

LNG Terminals Layer
Two strategic gas import facilities were mapped as points: Revithoussa LNG Terminal (land-based, near Megara, coordinates: 38.0260°N, 23.3870°E) and Alexandroupolis FSRU (offshore floating storage and regasification unit, coordinates: 40.8890°N, 25.5350°E). Styling: diamond marker, dark blue fill, size 6 units.

Grid Connection Zones (Buffer)
A 10-kilometre buffer around each substation was generated using the buffer tool (Vector > Geoprocessing Tools > Buffer) with dissolved output. The buffer was styled with light green fill at 70% transparency to indicate areas of favourable grid access without obscuring underlying infrastructure. *Note: Due to CRS reprojection challenges during the analysis, the buffer was ultimately omitted from the final Map 2 layout without loss of analytical validity; the spatial distribution of substations alone sufficiently communicates grid connectivity.* This decision was documented in the analysis.

Cartographic Styling Summary:

Feature	Symbol	Color	Size/Width	Label
400 kV lines	Line (solid)	Bright Red	1.2 mm	—
150 kV lines	Line (solid)	Orange	0.8 mm	—
LNG terminals	Diamond	Dark Blue	6 units	name (8pt, offset 2mm)

Print Layout
Same specifications as Map 1 (A4 landscape, 200 dpi PNG). Legend entries: "High-Voltage Transmission Lines" (with 400kV/150kV sub-entries), "Substations (Major Grid Nodes)", "LNG / FSRU Terminals". Title: Map 2: Energy Grid and Power Infrastructure.

A.4 Map 3: Regional Ports and Nuclear Sites

Regional Ports
Five regional ports were selected based on their relevance to SMR supply chain logistics and their connectivity to existing or planned nuclear facilities in Bulgaria and Romania.

Bulgaria:

Port	Location	Rationale
Burgas	Black Sea coast	Largest Bulgarian port; handles liquid and bulk cargo; rail connection to inland
Varna	Black Sea coast	Major container and general cargo port; adjacent to rail and road corridors to Romania and Central Europe

Romania:

Port	Location	Rationale
Constanța	Black Sea coast	Largest port in Southeast Europe (fourth largest in Europe); handles heavy-lift, Ro-Ro, container, and bulk cargo; direct rail and road connections to Central and Eastern Europe; closest major port to Cernavodă NPP and Doicești SMR project
Midia	Black Sea coast (north of Constanța)	Industrial port serving petrochemical and energy facilities; potential for SMR component staging
Giurgiu	Danube River (south of Bucharest)	Danube port opposite Bulgarian port of Ruse; inland waterway access

Points were digitised using the OSM Standard base map as reference, with coordinates recorded in EPSG:4326 (WGS 84) to maintain geographic consistency across the regional extent. An attribute field name was added to store port identifiers. Styling: teal circles (size 4 units) with black stroke (width 0.5 mm), differentiated from Greek ports (blue ship icons). Labels were applied using the name field (8 pt, dark grey, offset 2 mm).

Nuclear Sites
Three nuclear sites were mapped to illustrate the demand anchors that Greek logistics infrastructure can serve.

Romania:

Site	Location	Status	Supply Chain Relevance
Cernavodă NPP	Cernavodă, Constanța County	Operating (2 x CANDU-6); refurbishment underway	Existing nuclear supply chain; component logistics requirements
Doicești SMR	Doicești, Dâmbovița County (former coal plant)	Final Investment Decision approved (February 2026)	First European SMR; flagship project for NuScale VOYGR-6 technology; module transport logistics

Bulgaria:

Site	Location	Status	Supply Chain Relevance

Kozloduy NPP	Kozloduy (Danube River)	Operating (2 x VVER-1000); new units planned (AP1000)	Existing nuclear supply chain; planned expansion logistics

Points were digitised using OSM base imagery and cross-referenced with IAEA PRIS data, Nuclearelectrica public disclosures (for Cernavodă and Doicești), and Kozloduy NPP corporate publications. Attribute fields were created: name (facility name), status (operational status), and type (reactor technology). Styling: yellow circles (size 7 units) with black stroke (width 0.5 mm) to ensure visibility against the base map. Labels were applied using the name field (8 pt, dark red, bold, offset 2 mm).

Cartographic and Styling
Map 6 was produced in EPSG:4326 (WGS 84) to maintain geographic consistency across the Southeast European region. The following styling scheme was applied, maintaining visual continuity with Maps 1 and 2 where appropriate:

Feature Class	Symbol Type	Colour	Size/Width	Label
Greek ports	Ship icon (Font Marker)	Dark Blue	6 units	name (9pt)
Regional ports (Bulgaria, Romania)	Circle	Teal	4 units	name (8pt)
Nuclear sites	Star	Purple	7 units	name (8pt, bold, dark red)
Major highways	Solid line	Orange	1.0 mm	—
Rail network	Dashed line	Brown	0.6 mm	—

Layout and Export
The map was produced as an A4 landscape print layout using the same template established for Maps 1 and 2 to ensure consistent report styling. Layout components included: a title block ("Map 6: Southeast European Regional Context — Greece as a Logistics Hub", Arial Bold, 18 pt, centre-aligned), a legend (customised to include Greek ports, regional ports, nuclear sites, highways, and rail network), a scale bar (kilometres, line style), a north arrow (bottom-right corner), and a map frame (black outline, 0.5 mm width).

The map extent was set to cover Greece, Albania, North Macedonia, Bulgaria, Romania, and western Turkey, ensuring all relevant ports and nuclear sites were visible. Export resolution was 300 dpi (PNG format).

Strategic Interpretation
Map 3 is designed to support three interrelated arguments developed in Section 4.4 of the main report:

First, proximity to demand: Greek ports (Piraeus, Thessaloniki, Alexandroupoli, Volos) are within economic logistics distance of operating nuclear facilities at Kozloduy (Bulgaria) and Cernavodă (Romania), as well as the Doicești SMR project — the most advanced SMR deployment in Europe.
Second, multi-port advantage: While Romania's Constanța offers Black Sea access, Greece's distributed port network (Aegean and Ionian coasts, plus Alexandroupoli in the northeast) provides multiple entry points for components originating from Western European, North American, and Asian manufacturing hubs.

Third, overland connectivity: The Egnatia Odos (A2 motorway) and the A1 corridor, together with the Greek rail network, connect Aegean ports directly to Balkan inland markets, positioning Greece as the natural logistics gateway for Southeast European SMR supply chains.

A.5 Limitations Acknowledged

Limitation	Impact	Mitigation
OpenStreetMap data completeness	Some industrial facilities or substations may be omitted	Strategic focus on major assets only; cross-referenced with corporate and official sources where available
Temporary scratch layer volatility	Manual point and polygon layers initially created as temporary	Final layers exported to GeoJSON permanent files for project portability
WMS server export limits (Map 1)	OSM Standard WMS exceeded width/height parameters at 300 dpi	Switched to XYZ tile service (https://tile.openstreetmap.org/{z}/{x}/{y}.png)
Overpass Turbo data coverage	Power plant points incomplete in initial extract	Analysis prioritised transmission grid over generation; major plants added manually where required
10km buffer CRS issues	Geographic vs. projected coordinate system mismatch	CRS harmonised to EPSG:2100; buffer omitted from final layout without loss of strategic insight

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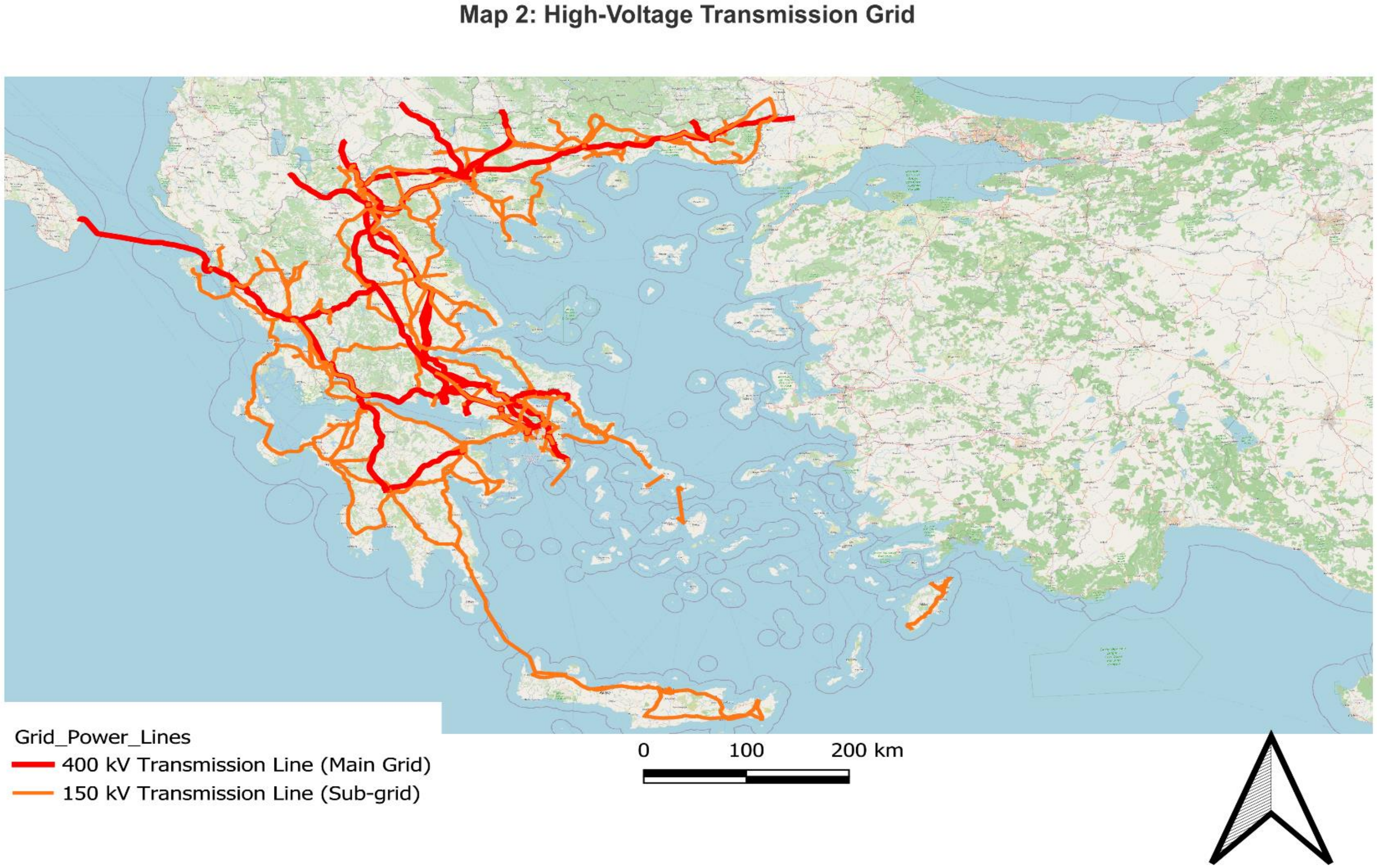
A.6 Data Availability

All spatial datasets generated during this analysis (GeoJSON point layers for ports, shipyards, LNG terminals; GeoJSON polygon layer for industrial zones) are available from the author upon reasonable request. Source OpenStreetMap data is freely available under the Open Database License (ODbL). QGIS 3.44 Solothurn is open-source software available at https://qgis.org.

A.7 Map 2: High-Voltage Transmission Grid National View

Greece's 400kV transmission backbone and 150kV sub-grid infrastructure. All three principal industrial clusters identified in Chapter 5 — Skaramagkas-Elefsina, Thessaloniki-Sindos, and Volos — are served by high-capacity transmission infrastructure. Source: Author's GIS analysis based on ADMIE/IPTO transmission network data.



Appendix B: SMR Vendor Profiles and Supply Chain Development Programmes

B.1 Nuscale Power Corporation

Headquartered in Oregon, is the first and only SMR developer to have received design approval from the U.S. NRC. Its VOYGR-12 plant configuration featuring twelve NuScale Power Modules at 77 MWe each, with a total generating capacity of up to 924 MWe (174). NuScale is advancing projects across Central and Eastern Europe, including a flagship partnership with KGHM Polska Miedź SA in Poland signed in February 2022 and targeting operational status as early as 2029 (175). In August 2024, NuScale expanded into Africa through an agreement with Ghana concluded at the U.S.-Africa Nuclear Energy Summit in Nairobi (176). NuScale signed a Memorandum of Understanding (MoU) in 2023 with Doosan Enerbility Co, Ltd and Korea Export Import Bank (KEXIM), examining global supply chain opportunities (177). They have signed also an agreement with Framatome in Europe to support global supply chains and fuel delivery (178). In February 2026, The Romanian nuclear operator Nuclearelectrica approved the Final Investment Decision for the small modular reactor project in Doicești at the site of a former coal plant, aiming for 462 MWe installed capacity using NuScale technology with six modules (49). The company is positioning its SMRs to meet the growing power demands of AI data centers, with collaborations involving Standard Power and ENTRA1 (179).

NuScale's agreements with Doosan Enerbility and Framatome provide additional evidence of how vendors are building global supply chain partnerships through bilateral agreements that combine component supply, quality assurance, and technology transfer.

B.2 GE Vernova – Hitachi

GE Vernova Hitachi Nuclear Energy (GVH), is developing the BWRX-300, a 300 MWe SMR designed for modular construction within a 24 to 36-month timeline. The Darlington New Nuclear Project in Ontario, the first SMR construction project in North America and the first new nuclear construction in Ontario in more than three decades, received approval for construction plans in May 2025 (180). GEH also secured a £33.6 million grant from the UK Department for Energy Security and Net Zero in January 2024, and the BWRX-300 is currently progressing through Step 2 of the UK Generic Design Assessment (181). In April 2026, together with the Sweden-based engineering, project management and advisory company AFRY, entered into a non-exclusive collaboration to support the deployment of BWRX-300 SMR technology (182). GE Vernova and Hitachi, Ltd. have signed a Memorandum of Understanding (MoU) in Tokyo, to explore opportunities to deploy the BWRX-300 SMR in Southeast Asia (183).

GE Vernova Hitachi Nuclear Energy's BWRX-300 programme is advancing on multiple fronts simultaneously. The Darlington project in Ontario, the first SMR construction project in North America, is providing the reference plant around which GVH's supply chain is being built. GVH's approach to supply chain development places particular emphasis on co-siting opportunities, the preference for deploying SMRs at or adjacent to retiring coal plant infrastructure, and on national industrial content within each host country. Its collaboration agreement with AFRY for European deployment and its MoU with Hitachi for Southeast Asian markets indicate a systematic programme of regional supply chain development.

B.3 Terrapower

Based in Washington State, is developing the Natrium sodium-cooled fast reactor, with a base output of 345 MWe that can peak at 500 MWe through integrated molten salt storage. The project broke ground in June 2024 at a site adjacent to a retiring coal plant in Kemmerer, Wyoming, supported by a DOE commitment of up to $2 billion and private funding exceeding $830 million.on March 2026, NRC approved the construction permit,, with commercial operation targeted for 2030 (184). Together with KBR in March 2025 formed a strategic alliance to establish a long-term collaboration for the commercialization and deployment of Natrium reactors in North America, the United Kingdom, European Union and beyond (185). In January 2026, announced an agreement with Meta to develop up to eight Natrium reactor one and energy storage system plants to support Meta's data centers (186). Beyond Natrium, TerraPower is developing the Molten Chloride Fast Reactor (MCFR), designed for higher temperatures to facilitate industrial decarbonization and electrical generation (187). Terrapower has teamed with HD Huyndai to expand the global manufacturing supply chain for Natrium SMR, as well to develop and commercialize Molten Salt Reactor (MSR) technology for nuclear-powered vessels, targeting 2030 for deployment (83).

B.4 Rolls-Royce SMR

The Rolls-Royce SMR, is a small modular reactor (SMR) design being developed by the Rolls-Royce (RR) company in the United Kingdom. The company has been given financial support by the UK Government to develop its 470 MWe design. It has successfully completed Step Two of the GDA which confirms Rolls-Royce SMR's position as the leading SMR vendor in Europe (188). Rolls-Royce SMR and Great British Energy - Nuclear (GBE-N) have signed a contract that enables work to start immediately on the delivery of three Rolls-Royce SMRs, which they will be Europe's first SMR fleet (189). Together with GE Vernova have been selected by Vattenfall as the only two companies to reach the final stage in the process to identify Sweden's nuclear technology partner (190). Rolls-Royce SMR and Czech utility ČEZ Sign Early Works Agreement in 2025 to advance SMR Deployment in Czech Republic (191). In March 2026, Rolls-Royce SMR and Swedish nuclear technology company Studsvik AB have signed a Memorandum of Understanding (MoU) to broaden their relationship across Studsvik's full range of services to support the Small Modular Reactor (SMR) programme, strengthening their European supply chain (192).

Rolls-Royce SMR has articulated the most explicitly national supply chain development strategy of any vendor operating in the European market. Having been selected by Great British Nuclear as the United Kingdom's national SMR technology following a competitive process, and having recently been awarded a contract to deliver Europe's first SMR fleet in partnership with Great British Energy-Nuclear, the company is now scaling its supply chain engagement internationally (189). Its agreement with ČEZ to deliver 3 GW of capacity in the Czech Republic demonstrates the fleet-based deployment model that drives supply chain investment. Its recent MoU with Sweden's Studsvik AB is an example of targeted specialist partnership to strengthen European technical service capacity. The Rolls-Royce SMR supply chain model is explicitly oriented toward European manufacturing content. The company has identified factory-based module production as central to its cost reduction pathway and is working to establish a network of certified manufacturing partners across European markets. For countries seeking supply chain participation, the Rolls-Royce programme represents a direct entry point: the company is actively looking for partners capable of meeting its quality standards, and the volume implied by its current contracted orderbook, three UK units plus the Czech programme, is approaching the threshold at which dedicated supply chain investment becomes commercially justified.

B.5 NuWard

NuWard, an EDF subsidiary, is developing a 400 MWe (2x200 MWe) European Small Modular Reactor (SMR) based on proven Pressurized Water Reactor (PWR) technology. Following a 2024 design review, the project is focusing on a simplified, modular design to meet 2030s market deployment goals, targeting European utilities and industrial cogeneration (193). The project is supported by French and European partners including CEA, TechnicAtome, Naval

Group, and Framatome, and has, received a €300 million grant to support R&D applications for that project. In November 2025, Italian technology and engineering group Maire SpA and its sustainable technology subsidiary NextChem have signed a memorandum of understanding with EDF and its Nuward subsidiary to jointly explore opportunities for cooperation in the development and deployment of the Nuward small modular reactor programme (194). They signed also a MoU with MAIRE and NEXTCHEM to cooperate for the deployment of NUWARD's SMR reactor to serve its E-Factory applications for data centers and low-carbon chemistry (195). The NuWard design has also demonstrated significant regulatory progress at the European level. In December 2025, six European nuclear regulators completed the second phase of a joint early review of the NuWard design, with the final report confirming that the collaborative approach "increases the efficiency of information exchange, accelerates the identification of technical differences and allows addressing key safety issues earlier than would be possible under separate national licensing processes." The review, which expanded from the original three regulators (France's ASN, Finland's STUK, and the Czech SÚJB) to include Poland, Sweden, and the Netherlands, covered technical topics including containment assessment, electrical systems architecture, and criticality risk management. Discussions are currently under way to continue the joint review into further technical areas, reinforcing NuWard's position as the primary vehicle for European multi-jurisdictional SMR licensing cooperation (90).

NuWard, EDF's SMR subsidiary and the vehicle for France's European SMR ambitions, occupies a distinctive position in the supply chain landscape. As the only SMR design developed through a consortium involving Naval Group as a co-developer, NuWard's supply chain development is directly connected to Naval Group's existing industrial partnerships across European defence and energy manufacturing programmes. The NuWard design's completion of the second phase of a joint European regulatory review involving six national regulators, confirming that the collaborative approach accelerates safety review and reduces duplication, reinforces its positioning as the primary vehicle for European multilateral SMR deployment. METLEN's MoU with Naval Group, described further in Section 3.1, it constitutes a point of entry into the NuWard supply chain ecosystem through one of its most strategically positioned co-developers.

B.6 Holtec International

Holtec International is developing the SMR-300, a small modular pressurized water nuclear power plant. The SMR-300 produces approximately 320 Megawatts electric (MWe) power or 1050 Megawatts thermal (MWt) for process applications (196). They have signed an accord with Huyndai Engineering & Construction, to accelerate the deployment of the SMR-300 globally (197). Together they are refurbishing the Palisades nuclear plant in Michigan to deploy a twin SMR-300, supported by a $1.5 billion dollar loan guarantee by the US DOE (198). In March 2026, SMR-300 competed successfully the second phase of the Generic Deign Assessment (GDA) by the ONR in UK. Together with EDF UK announced plans to construct SMR-300 SMRs at the former Cottam coal-fired power station in Nottinghamshire.to provide power to new, advanced data centres on the site (199). In December 2025, Holtec International has announced a memorandum of understanding with Hungary's energy giant MVM to explore the deployment of Holtec's SMR-300 small modular reactor technology in the country (200).

Holtec International's SMR-300 programme has demonstrated a notably active approach to supply chain partnership, particularly in the context of its European ambitions. The SMR-300's completion of Step 2 of the UK Generic Design Assessment and its announced deployment at the former Cottam coal station in partnership with EDF UK confirm it as a serious contender in the European market. Holtec's agreement with Hyundai Engineering and Construction for accelerated global deployment and its MoU with Hungary's MVM establish the pattern of country-specific supply chain partnerships that characterise its commercial strategy (197). For Southeast European markets, Holtec's combination of US regulatory approval track record, European licensing progress, and active regional partnership-building makes it a vendor whose supply chain outreach warrants close attention.

B.7 X-Energy

X-energy is a US-based advanced nuclear company developing the Xe-100, an 80 MWe high-temperature gas-cooled pebble bed reactor designed for deployment in four-unit 320 MWe plant configurations. The Xe-100 was selected under the US Department of Energy's Advanced Reactor Demonstration Programme, receiving a cost-share award of up to USD 2.09 billion to support demonstration and deployment (168). The programme's lead commercial project is a four-unit Xe-100 plant for Dow Chemical at its Seadrift, Texas petrochemical facility, targeting industrial heat and power cogeneration, the first nuclear energy project to be sited at an active industrial complex in the United States. A second project is under development with Energy Northwest at the Columbia Generating Station site in Washington State. In 2025, X-energy signed a memorandum of understanding with Amazon Web Services to explore SMR deployment for data centre power supply, reflecting the growing industrial and technology sector demand for firm low-carbon power that the Xe-100's modular configuration is designed to serve (201).

X-energy's supply chain development programme is advancing in parallel with its deployment pipeline, with the company actively engaging fabricators, component manufacturers, and specialist service providers capable of meeting its quality requirements for the Xe-100's graphite-moderated core, helium coolant circuit, and compact heat exchanger systems. The Xe-100's HTGR technology operates at higher temperatures than light water reactor designs and uses different materials specifications, meaning that companies qualifying for X-energy supply chain roles are developing capabilities with applicability beyond nuclear power generation into industrial decarbonisation and hydrogen production markets. For Greece, X-energy's relevance extends beyond the technology itself: the confirmed PCL Construction EPC relationship, established through the stakeholder consultation underpinning this report, provides a direct institutional connection between the Xe-100 programme's contractor network and the Greek industrial actors whose heavy fabrication and inspection capabilities are most directly applicable to the programme's component requirements.

Appendix C: Stakeholder Consultation Register

This register documents the stakeholder consultations undertaken in the preparation of this report. Consultations were conducted on a not-for-attribution basis unless the contributor has explicitly consented to be named. All contributions have been incorporated into the analysis as indicated and are cited accordingly throughout the report.

Name & Title	Organisation	Date & Format	Contribution to Report
Dr. Yannis Bassias	International Hellenic University / Independent Expert	2025–2026 Ongoing Academic Supervision and Advisory	Provided academic supervision and intellectual guidance throughout the research process. Reviewed draft sections and the executive summary, and provided substantive input on the regulatory, policy, and financing dimensions of SMR deployment in Southeast Europe. Facilitated introductions to key institutional and industry contacts relevant to the report's stakeholder engagement programme. Input informed the report's overall analytical framework and Sections 2.3, 4.2, 6.1, and 7.1.
Emmanuela Manta, Mettalurgical Engineer	SpectrumNDT, Greece	June 2026 Written Feedback	Provided practitioner assessment of the barriers facing nuclear-uninitiated NDT companies seeking supply chain entry, noting that the qualification pathway for NDT firms without prior nuclear project experience is significantly more demanding than certification standards alone suggest. Specifically identified the individual-certification pathway — where certified NDT personnel are engaged directly by main contractors rather than through their employing company — as a realistic near-term entry mechanism for Greek NDT companies alongside the company-level ISO 19443 qualification route. Input informed Sections 3.9, 6.3.2, and 7.2.1.
Louie Shoukas Chief Nuclear Officer	PCL Construction, Canada	June 2026 Video Call	Provided practitioner assessment of nuclear supply chain qualification processes from a nuclear EPC contractor perspective, including realistic timelines from certification to first commercial order, the recertification cost burden as the primary financial risk for first-mover companies, the distinction between certification-based and owner-audit-based qualification pathways for construction contractors, and the BWRX-300 programme's supply chain development approach at the Darlington reference plant. Also provided perspective on SMR economics and the competitive landscape among advanced reactor vendors. Input informed Sections 6.3, 7.2.2, 7.2.5, 7.2.7, and 7.3.

Name & Title	Organisation	Date & Format	Contribution to Report
Louie Shoukas, Chief Nuclear Officer	PCL Construction, Canada	June 2026 Written Exchange	Provided independent assessment of shipyard environments as viable nuclear fabrication platforms, identifying crane capacity and available working space as the primary enabling variables and controlled clean environment enclosures as the principal adaptation requirement for reactor vessel and steam generator manufacturing. Characterised the Elefsina corridor as an enviable fabrication site whose existing infrastructure places it ahead of most purpose-built alternatives in terms of the physical prerequisites for nuclear-grade manufacturing. Input informed Sections 3.10 and 6.1.1.

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