ENERGY / CONTINENTAL INFRASTRUCTURE

OCTOBER 2026

EUROPE IS TRYING TO REGULATE THE FIRE INSTEAD OF ASKING WHY THE BUILDING KEEPS BURNING

A pile of projects is not a system.
It is hope with paperwork.

PROJECTS / REGULATIONS / TARGETS
DO NOT ASSEMBLE THEMSELVES INTO ARCHITECTURE.

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SYSTEM OF SYSTEMS ARCHITECT

ENERGY ARCHITECTURE / SYSTEM INTEGRATION / CONTINENTAL BACKBONE

01 PROBLEM FRAMING

Data centers are not Europe's energy problem. They are one visible symptom of a missing continental energy architecture.

Europe has 235 cross-border energy infrastructure projects. Good. According to the European Commission, nearly half of them are electricity, offshore and smart electricity grid projects, while another large part concerns hydrogen and electrolysers. Again: good. But a pile of projects is not a system. It is hope with paperwork.

Projects may be necessary. Interconnectors may be necessary. Hydrogen corridors, offshore grids, storage projects and transmission upgrades may all be necessary. But projects are execution units. Architecture is the logic that tells every project why it exists, where it belongs, what it connects to, what it stabilises, and what function it serves in the whole system. Without that layer, projects do not automatically become a system. They become a portfolio, a list, a political announcement, a funding map. A continent cannot be powered by a project list. It needs architecture.

Most public debates start too late

The problem is not that Europe has no projects. The problem is that Europe still behaves as if enough projects, regulations, targets, labels and funding mechanisms will eventually assemble themselves into a continental energy architecture. They will not.

This is the pattern I see again and again in public debates. The debate begins when the symptom is already visible. Data centers need more electricity, so the discussion moves toward efficiency standards, reporting, sustainability labels and ratings. Electric vehicles increase electricity demand, so the discussion moves toward charging infrastructure. Industrial electrification grows, so the discussion moves toward grid pressure. AI expands, so the discussion moves toward data center consumption. Cooling demand rises, so the discussion moves toward efficiency.

Every visible pressure gets its own debate. Every debate gets its own regulation. Every regulation creates the impression that the system is being managed. But the deeper question is rarely asked early enough: why does the system keep producing the same type of pressure? That is the difference between reacting to symptoms and designing architecture. Experts answer inside the frame. Architects ask why the frame exists.

PROJECTS	ARCHITECTURE
execution units	logic of the whole system

The data center debate is framed too narrowly

Data centers are a good example. Europe is preparing new rules for data centers because they will need more electricity: minimum efficiency standards, sustainability labels, reporting and ratings. That is the public frame. And the public frame is too small.

Data centers will consume more energy. That is true. They should be efficient. That is also true. No serious system should waste energy. But the moment the debate becomes only about data center efficiency, we have already reduced a continental infrastructure problem into a sectoral consumption problem. That is the wrong layer of analysis.

Data centers are not an anomaly. They are one visible part of a much larger electrification wave: electric vehicles, electric homes, electric heating, electric industry, AI infrastructure, digital administration, automation, robotics, cooling demand, defence systems, cloud services, cybersecurity and operational resilience. Everything is moving toward electricity.

So the real question is not: how do we make one visible sector consume less? The real question is: why is Europe electrifying civilization without a continental energy architecture designed for that demand? That is the architectural question. And it is the question Europe keeps avoiding.

ELECTRIFICATION WAVE

- ELECTRIC VEHICLES
- ELECTRIC HOMES
- ELECTRIC HEATING
- ELECTRIC INDUSTRY
- AI INFRASTRUCTURE
- DIGITAL ADMINISTRATION
- AUTOMATION / ROBOTICS
- COOLING DEMAND
- DEFENCE SYSTEMS
- CLOUD SERVICES
- CYBERSECURITY
- OPERATIONAL RESILIENCE

Metrics shape panic

There is also a second problem: the way numbers are framed. Data centers are often discussed in gigawatts of capacity, while electric vehicles are often discussed as a percentage of annual electricity demand. Those are different ways of presenting pressure on the system. Change the unit, and you change the emotional reaction.

If we say that data center capacity may reach 28 GW by 2030, it sounds large, concentrated and alarming. If we translate that capacity into annual electricity demand, the comparison becomes more useful. At 70-90% load, 28 GW represents roughly 172–221 TWh per year. The increase itself - from 12 GW to 28 GW - represents roughly 98–126 TWh per year at the same load range.

Now compare that with electric vehicles. EV charging is projected to become a major electricity-demand layer by 2030. Some estimates place EU-27 EV charging demand around 165 TWh by 2030, roughly 6% of expected electricity consumption. Different systems. Different load behaviour. Same architectural signal. Both data centers and EV charging are becoming major electricity-demand layers, but they are framed differently.

Nobody says: stop charging electric cars. Nobody frames EV charging as a reason to slow down electrification. We call it infrastructure. We build charging networks, upgrade grids, discuss smart charging, plan storage and design around the demand. Exactly. Because EV charging is understood as part of the electrified future. Data centers are being framed differently. That is the inconsistency.

28 GW

DATA CENTER CAPACITY

2030

172–221 TWh / year

at 70–90% load

+16 GW

CAPACITY INCREASE

12 → 28 GW

98–126 TWh / year

at the same load range

~165 TWh

EV CHARGING DEMAND

EU-27 / 2030

~6%

of expected electricity consumption

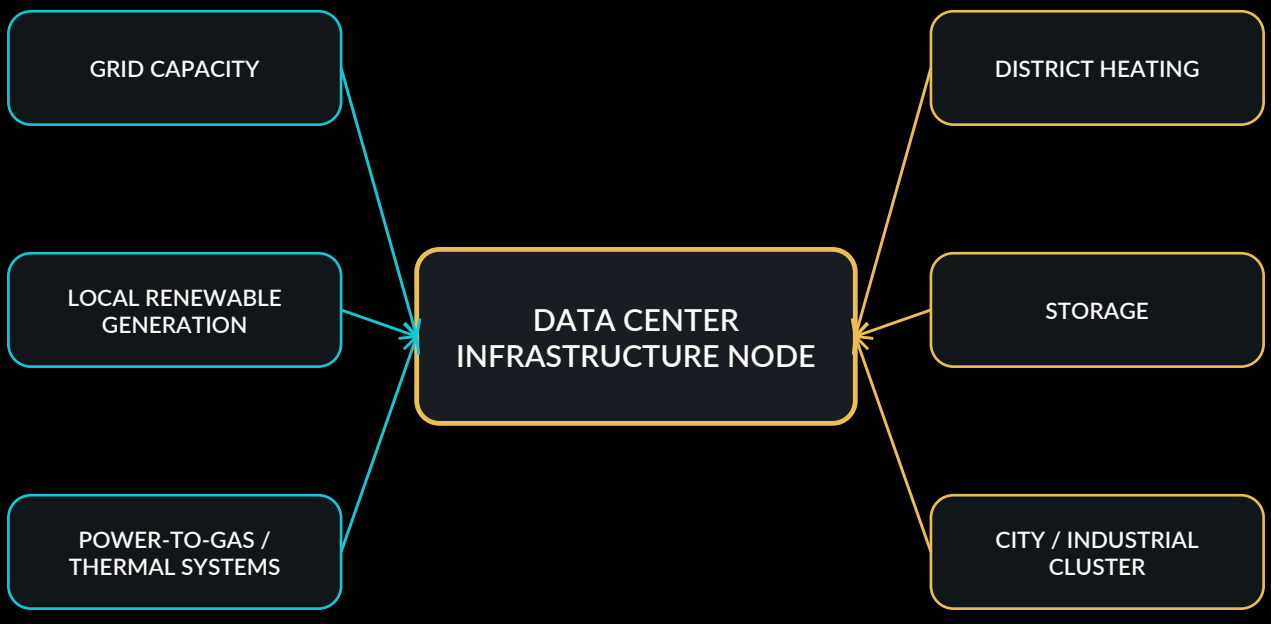
Data centers should not be treated only as large consumers

A data center is not just a load. It is an infrastructure node. This matters because modern economies increasingly depend on compute. AI depends on compute. Cloud services depend on compute. Digital administration depends on compute. Cybersecurity depends on compute. Industrial data systems depend on compute. Operational resilience depends on compute.

We may criticize excessive dependency on cloud infrastructure. We may question centralization. We may discuss sovereignty, ownership and control. But the basic fact remains: Europe needs data centers - preferably more sovereign, better located, better integrated and better designed data centers, not data centers treated as isolated electricity problems.

A serious architecture would ask a different set of questions. Where should data centers be located in relation to grid capacity? Where can they support district heating through waste heat recovery? Where can local renewable generation reduce pressure on the grid? Where should storage be placed? Where can a data center become part of a local energy hub instead of a passive load? Where can power-to-gas, batteries or thermal systems turn surplus energy into system value? Where does the data center serve the grid, the city, the heating system or the industrial cluster around it?

That is the difference between regulation and architecture. Regulation asks the data center to report, label and optimize. Architecture asks what role the data center should play inside the energy system. Those are not the same thing. Efficiency matters, but efficiency is not architecture. A regulation can improve a layer. It cannot replace the system.



Europe needs one continental energy architecture

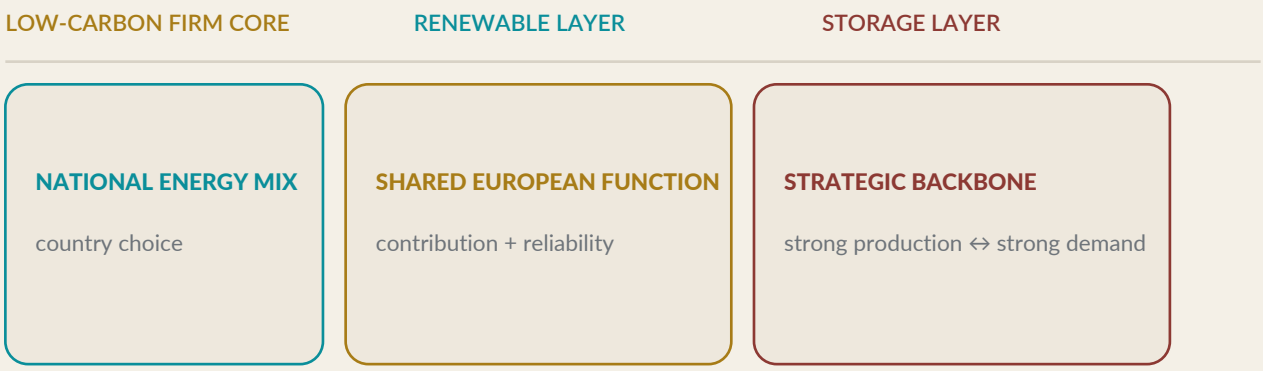
The answer is not one forced national energy mix. It is not one political fantasy. It is not one central office deciding every power plant in every country. Europe does not need to violate national energy sovereignty to build a continental energy architecture. It needs one architecture above national systems.

A country should keep its right to choose its own mix. But the shared European grid should define what every country must contribute to the continental system: low-carbon connected capacity, renewable capacity, storage, grid stability, cross-border transmission, reserve logic, operational reliability and system flexibility.

For example, Poland may receive a defined low-carbon contribution target to the shared grid by 2050. How Poland delivers it is Poland's decision: nuclear, offshore wind, solar, onshore wind, hydro where it makes sense, storage or hybrid systems. The architecture does not need to dictate the mix. It needs to define the system function. That is the difference.

A shared target might be 600–650 GW of continental low-carbon energy capability by 2050. A strategic backbone would connect the strongest production regions with the strongest demand regions through HVDC and interconnectors. A low-carbon firm core would include nuclear, geothermal, hydro and pumped hydro where geography allows it. A massive renewable layer would include offshore wind in the Baltic and North Sea, solar in Southern Europe, wind where it makes sense, and tidal or ocean energy where geography gives Europe that advantage. A storage layer would include batteries, pumped hydro, thermal storage and power-to-gas.

Surplus renewable energy should not become a curtailment problem. It should become a system asset. Where power-to-gas storage is built, high-efficiency reconversion blocks can be placed next to it. Not fossil gas as the future, but stored surplus energy converted back into electricity when the system needs it. That is a different architecture.



Every region should have a function

The same logic applies to geography. Poland may add only hundreds of MW from large hydro. Fine. That is still a layer. The Alps may provide much more important hydro and pumped hydro functions. Fine. That is another layer.

Italy and Greece may have geothermal roles. Spain and Portugal may carry large solar and storage roles. France may remain a nuclear stability pillar. Poland may become a Baltic offshore and nuclear node. Northern Europe may carry offshore wind and grid balancing functions.

No country has to become the whole answer. Every country has to become a designed part of the answer. That is what architecture does. It does not ask every component to do the same thing. It defines the function of each component in the whole system. Europe already has diversity. The question is whether that diversity becomes chaos or architecture.

ALPS
hydro + pumped hydro

ITALY / GREECE
geothermal

SPAIN / PORTUGAL
solar + storage

FRANCE
nuclear stability pillar

POLAND
Baltic offshore + nuclear

NORTHERN EUROPE
offshore wind + grid balancing

Control layers matter

Then come the control layers: international human-operated control centres, regional human-operated control centres and automated local nodes. Not AI deciding the grid. AI may support analysis, forecasting, anomaly detection and operational awareness. But critical infrastructure should remain operated by trained humans, procedures and accountable control structures.

This matters because energy systems are not dashboards. They are physical systems with real consequences. Automation can execute. AI can support. But final authority in critical infrastructure should remain accountable.

Europe already has a human resource for that. Closing coal plants should not mean losing energy operators. The old fuel can leave the system. The operational knowledge should stay. People who spent their lives operating power plants should not be thrown away by the transition. They should be moved into the new control architecture. That is how a serious transition works. It does not waste energy. It does not waste infrastructure. It does not waste human expertise.

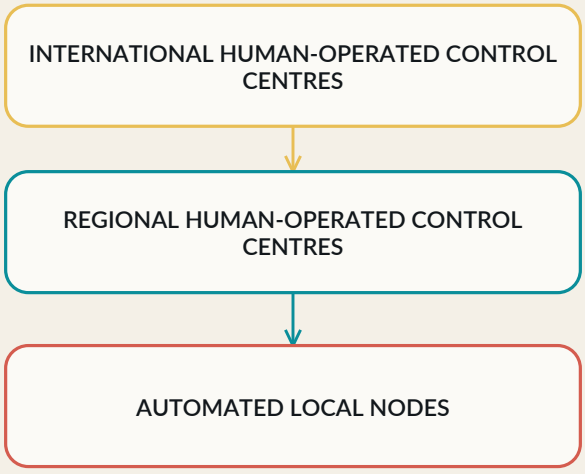
AI MAY SUPPORT

analysis

forecasting

anomaly detection

operational awareness



Price stability is not magic

A serious architecture also does not pretend that price stability is magic. Stable energy prices do not appear because someone wants them to. They come from system design: enough low-carbon capacity, enough storage, enough transmission, enough reserve, enough controllability, enough flexibility and enough shared logic between countries.

Energy prices are not only a market phenomenon. They are also an architectural consequence. If the system is fragmented, underbuilt, reactive and poorly connected, prices will reflect that. If the system has abundant capacity, strategic storage, strong transmission, human-operated control layers and clear regional functions, prices have a different foundation.

Europe often talks about competitiveness. But industrial competitiveness begins with energy architecture. You cannot rebuild manufacturing on expensive, unstable and fragmented energy. You cannot electrify transport, industry, homes, heating, compute and administration and then act surprised that electricity demand grows.

This is not a data center problem. It is not an EV problem. It is not a single-sector problem. It is a civilization-scale electrification problem. And civilization-scale electrification requires civilization-scale architecture.

PRICE FOUNDATION

- CAPACITY
- STORAGE
- TRANSMISSION
- RESERVE
- CONTROLLABILITY
- FLEXIBILITY
- SHARED LOGIC

09 CONCLUSION

Europe is trying to regulate the fire

This is why the current approach feels wrong. Europe often behaves as if the answer to systemic pressure is another regulation, another label, another reporting framework, another list, another funding call, another fragmented project layer. Some of those tools are useful. But they are not enough.

A regulation can describe the fire. It cannot replace the architecture that should have prevented the building from burning again.

A pile of efficiency rules is not an energy strategy. It is rationing with paperwork.

A pile of projects is not a system. It is hope with paperwork.

Europe already has regulations, projects, funds, operators, engineers, grids, markets and institutions. What it lacks is the layer above them: a continental infrastructure systems architecture.

235 projects may help. But only if they belong to one system.

Europe does not need projects looking for an architecture.

Europe needs architecture divided into executable projects.

You cannot electrify civilization and then act surprised that it needs power.

And you cannot power a continent with paperwork.

It needs architecture.

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