



FURAMA
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DANANG
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KỶ YẾU

**HỘI THẢO ĐẨY MẠNH GẮN KẾT BA NHÀ
(NHÀ NƯỚC - ĐẠI HỌC - DOANH NGHIỆP)
THỰC CHẤT, HIỆU QUẢ GÓP PHẦN PHÁT TRIỂN ĐẤT NƯỚC
TRONG KỶ NGUYÊN VƯỜN MÌNH**

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Abstract – European framework programmes, such as Horizon Europe, increasingly reward consortia of partners which can turn scientific excellence into measurable socio-economic impact. Within the Triple Helix model of government–university–industry collaboration, industrial partners are no longer passive end-users, but act as co-creators raising the technology readiness level, securing exploitation pathways and anchoring results in real markets. This paper examines how industrial engagement in European projects could be a possible example, drawing on the experience of the recently submitted Common Suns (Ener-C project) on digitalized, citizen-centered energy communities. It analyses the complementary roles played by Edison, as an energy utility, and STMicroelectronics, as a semiconductor manufacturer, and distills practical recommendations for academia, public institutions and enterprises seeking to strengthen Triple Helix linkages.

Keywords – Triple Helix; Horizon Europe; industrial partnership; technology transfer; energy communities; exploitation and impact.

1. Introduction

The European Union (EU) develops a big share of its research and innovation funding through framework programmes. Under Horizon Europe (2021–2027) [1] more than ninety billion euro support collaborative projects that are expected not only to be scientifically excellent but also to deliver concrete economic, environmental and social benefits. Proposals are assessed against three criteria - Excellence, Impact and quality of Implementation - and it is increasingly the Impact dimension that separates funded from rejected consortia.

Impact, in turn, depends heavily on the active participation of industry. The Triple Helix model first articulated by Etzkowitz and Leydesdorff [2] describes innovation as the product of dense interaction among three institutional spheres: universities that generate knowledge, public authorities that set the rules and provide legitimacy, and enterprises that bring products to market. This paper argues that the deliberate engagement of industrial partners is a decisive success factor for European projects and illustrates the point through the Common Suns initiative and the involvement of Edison and STMicroelectronics. It is offered as a contribution to the Da Nang workshop on strengthening government–university–enterprise linkages.

2. The role of industrial partners in European projects

Industrial partners bring key contributions through the entire project value chain. Recently they raised the requested technology readiness level (TRL) of the projects, moving prototypes out of the laboratory (typically TRL 3–4) towards validated demonstrators and pre-commercial solutions. Enterprises also provide real operating environments, field data and co-financing, and they own the channels - production lines, customer bases and distribution networks - through which results reach the market after the grant ends. Companies now account for almost 30% of applicants to Horizon Europe, up from 17% under Horizon 2020 [3] (Figure 1).

Equally important, industry shapes the credibility of a proposal's exploitation plan. Reviewers expect a clear account of key exploitable results, intellectual-property arrangements and business models; these are convincing only when an industrial partner stands behind them. A well-balanced consortium therefore pairs the scientific novelty of academia and the integration capacity of research organizations with the deployment power of firms and the regulatory reach of public bodies.

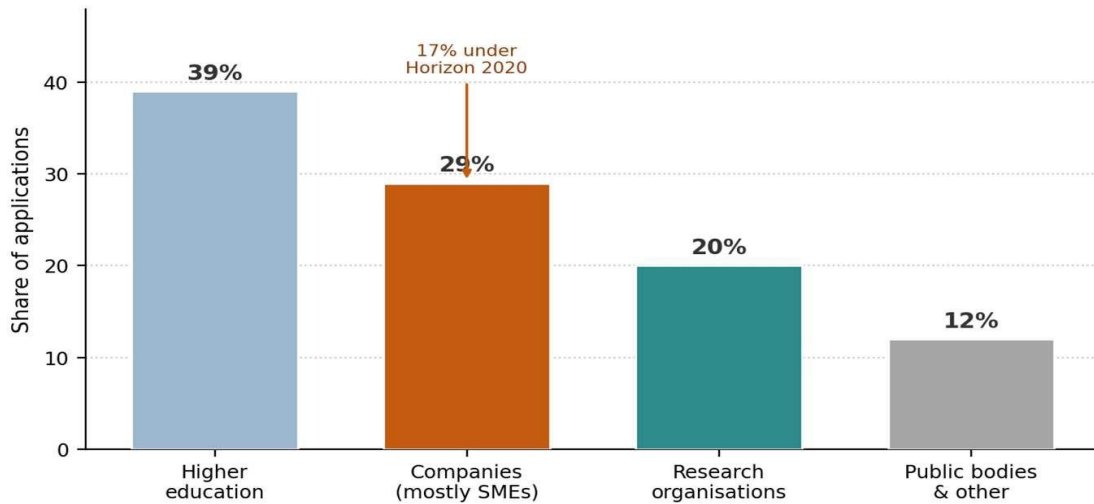


Figure 1. Share of applications to Horizon Europe by type of organization (to end 2022).
Companies – predominantly SMEs – rose from 17% under Horizon 2020 to 29%.
Source: Horizon Europe monitoring data

3. Case study: industrial engagement in the Common Suns project

3.1. The Common Suns initiative and the Ener-C action

Common Suns is a European initiative addressing the digitalization of solar-driven, citizen-centered energy communities. Its Ener-C action targets the coordinated management of distributed photovoltaic generation, battery storage, electric-vehicle charging and demand flexibility within local energy communities, governed by embedded intelligence at the grid edge. The Department of Energy of Politecnico di Milano leads scientific work on forecasting and optimization, while two industrial partners ground the research in manufacturable hardware and operational energy services. Figure 2 summarizes this shared workload.

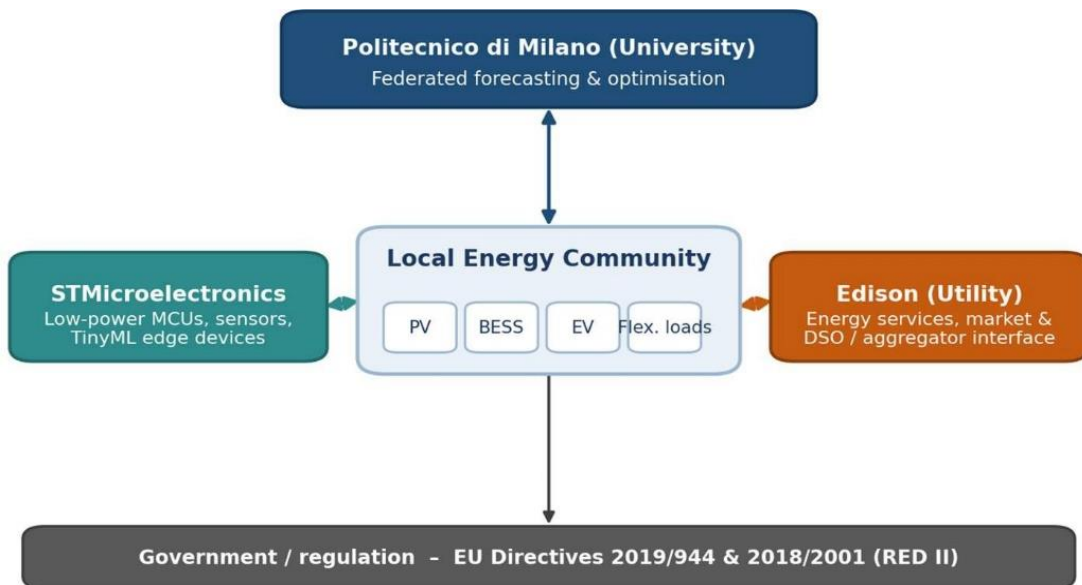


Figure 2. Complementary Triple Helix roles in the Common Suns / Ener-C architecture

3.1.1. Edison: the energy-utility role

Edison, one of Italy's leading energy companies, hosts and operates the pilot energy communities. It contributes expertise in grid and market operation, the aggregator and distribution-system-operator interface, and compliance with the European electricity-market rules of Directive (EU) 2019/944 [4] and the renewable-energy-community provisions of Directive (EU) 2018/2001 [5]. By validating the project's algorithms under real operating and regulatory conditions, and by designing the associated business models, Edison secures a credible route from demonstrator to commercial service, also due to its own renewable energy community near Bergamo (which is shown in Figure 3), in service since 2023.

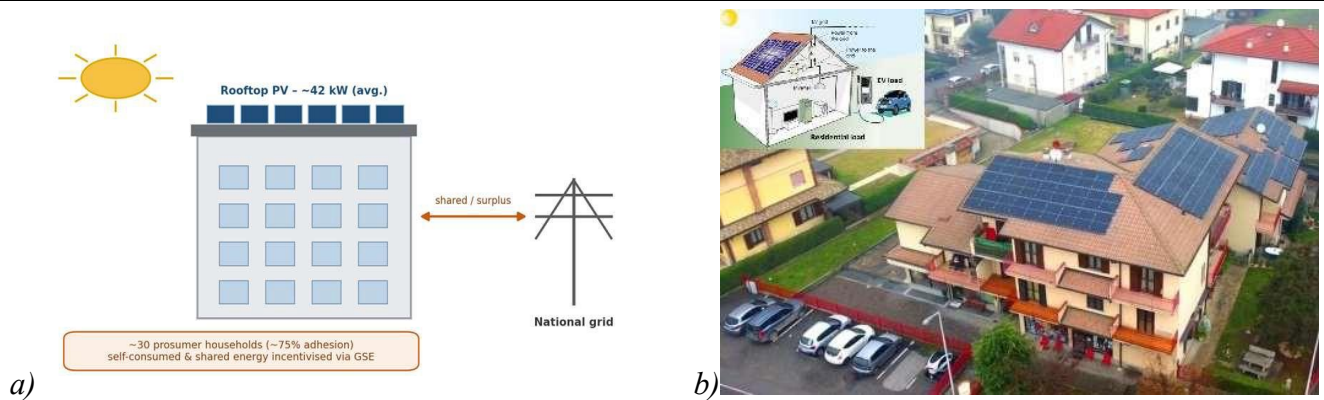


Figure 3. a) Edison's condominium renewable energy community model, as deployed near Bergamo (in service since 2023): rooftop PV shared among enduser households, surplus exchanged with the grid. Illustrative scheme; source: Edison Energia. b) actual Renewable Energy Community by Edison

3.1.2. STMicroelectronics: the semiconductor and edge-intelligence role

STMicroelectronics, a global semiconductor manufacturer, supplies low-power microcontrollers, sensors and TinyML-compatible edge devices on which the local intelligence of the energy community operates. On-device monitoring and short-term forecasting of generation and consumption reduce latency, communication costs and data privacy risks. Essentially, the company guarantees manufacturability, cost control and standardized interfaces, ensuring that pilot devices can be replicated and produced by scaling up the number of devices: a prerequisite for replicating the solution across many communities. A representative device is the STM32N6, the first STM32 to integrate a Neural-ART NPU for on-device inference (Figure 4).

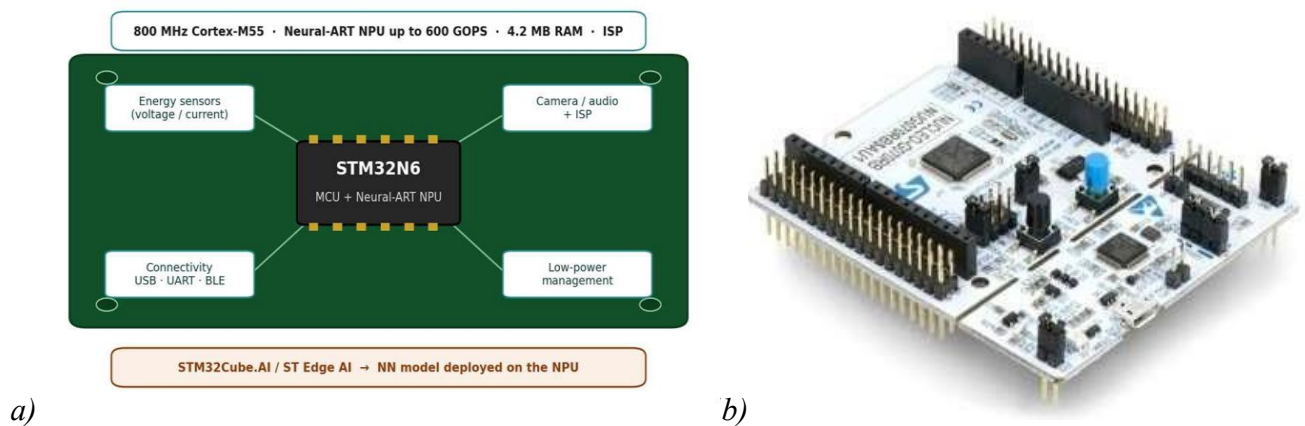


Figure 4. a) Representative STMicroelectronics STM32N6 edge-AI/TinyML board for on-device monitoring and forecasting. Illustrative scheme; source: STMicroelectronics product documentation. b) actual board employed

3.2. Complementary contributions and joint exploitation

The two companies are complementary rather than overlapping, and this is a key point: STMicroelectronics provides the sensing-and-computing layer, while Edison the energy-service-and-market layer, and finally the university develops the algorithms connecting them all. This workload division yields shared exploitable results - an embedded forecasting module, an energy-community management platform and a replicable deployment blueprint - each one with a clear owner and route to market, which is precisely what European examiners look for under the Impact criterion. Notably, both Edison and STMicroelectronics take part as in-kind partners, contributing staff effort, equipment and pilot infrastructure rather than drawing project funding - a commitment that signals strong industrial buy-in to evaluators.

4. Lessons learned and recommendations

The Common Suns experience suggests several transferable principles. First, industry should be engaged at the proposal stage and co-design the objectives, so that exploitation is built in rather than added afterwards. Second, intellectual-property arrangements and the list of key exploitable results should be

agreed early and revisited throughout the project. Third, partner roles should be complementary and non-redundant, with real pilot sites and field data acting as the common anchor.

Fourth, a lightweight Triple Helix governance structure - associating the consortium with public authorities, regulators and system operators - keeps research aligned with the regulatory and market reality into which results must fit. For policymakers, including those building Da Nang's emerging innovation ecosystem, the implication is to create instruments that de-risk industrial participation, support clustering between firms and universities, and reward demonstrable pathways to deployment.

5. Conclusion

Industrial partners are the key mechanism by which scientific excellence delivers socio-economic impact. The presented Common Suns initiative shows how an energy utility and a semiconductor manufacturer can play distinct yet reinforcing roles, with academia binding their contributions together. The resulting model-clear complementary roles, early and explicit exploitation planning, and Triple Helix governance-offers practical guidance for any region, Vietnam included, that aims to convert collaborative research into lasting industrial and societal value.

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