

Energy governance for sustainable development: Local content policies in the energy sector

ENERGO Project Policy Brief No1

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ENERGO

Energy Governance for Sustainable Development

About the ENERGO project

ENERGO undertakes a thorough investigation of the public policies that relate to local content and sustainable management of energy projects. ENERGO further assesses the policy implications of diversification of energy sources (increasing penetration of renewable energy sources in the energy mix and fossil fuel divest) and sustainable development targets for revenue management.

Both Norway and Greece aim at exploiting their energy resources considering sustainable development goals, just energy transition and climate change policy targets. In this context, local content and prudent management of energy revenues play a crucial role. “Local content” refers to the creation of jobs and innovation opportunities for local communities and businesses. “Revenue management policies” refer to the use of public revenues generated from energy projects for investment (e.g., infrastructure), saving or spending. Local content can reverse “brain drain” and stimulate innovation. Prudent revenue management is linked to both sustainable development goals and climate change mitigation policies.

Addressing questions related to local content and revenue management for energy projects is relevant to both Norway and Greece. Analysis can provide mutually beneficial insights and useful results for other countries in the Southeast Mediterranean, like Cyprus. ENERGO project aims at the advancement of scientific evidence-based mutual knowledge development in the fields of energy economics and policies, governance, and sustainable development. ENERGO further supports capacity building and continuous collaboration by bringing together a multi-disciplinary team of experts, from Norway and Greece, to systematically analyze common challenges and solutions. The project addresses challenges at national and transnational level in an inter-disciplinary approach and it extracts useful policy recommendations with regards to sustainable and inclusive energy policies in Greece and Norway.

ENERGO is implemented by the [Department of Economics](#) at the [University of Ioannina](#) in collaboration with the [Norwegian Institute of International Affairs](#) and the [Political Economy of Sustainable Development Lab](#) at the [National and Kapodistrian University of Athens](#). The project started in April 2021, has 36 months duration and it is funded by the European Economic Area (EEA) Financial Mechanism 2014-2021 [EEA Grants 2014-2021](#), Bilateral Fund.

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1. Introduction

Norway, a leading producer of both hydrocarbons and renewable energy, is considered a successful example of prudent policies that have managed to translate natural resources into economic growth and social prosperity. A factor contributing to this success is linked to the policies followed in the energy sector that actively promote local content, i.e., the creation of jobs and innovation opportunities for local communities and businesses. Local content policies target the utilization and the development of the local industrial and human capital through the creation of economic interactions between the energy sector and the rest of the sectors of the economy. Local content policies aim at increasing the value added beyond that directly derived from the energy production activities as well as creating opportunities for employment, innovation, and transfer of know-how (Tsani, 2020; 2021).

Norway has a long experience of local content in the petroleum sector showcasing several successful examples. One prominent example is Melkøya island in Hammerfest, where policies (like infrastructure investments) and business practices (for instance Equinor's investments in community education and training) have reversed the "brain drain" and attracted people and investment in the island. Other examples are the policies and business strategies that have enabled small businesses in Norway to adapt existing knowledge (e.g., in the maritime sector) to energy projects (e.g., equipment for offshore oil platforms) or create new value chains (e.g., Morrow Batteries development of batteries for electric vehicles with the use of waste from the oil industry).

Greece is aiming for full exploitation of its renewable energy potential. Interest is expected to intensify due to the favorable socio-economic and environmental conditions, the 2030 renewable energy targets, energy transition and the Green Deal put forward at EU level, and the Greek energy policy orientation (e.g., addition of offshore wind parks to the country's energy mix, following policy announcements and the expressed interest of leading companies in the sector, such as Norway's Equinor in tapping wind energy in the Aegean Sea). Greece is also exploring its hydrocarbon potential. Since 2014 the Hellenic Parliament has ratified 11 Lease Agreements regarding hydrocarbon exploration and production (4 onshore blocks-Ioannina, Aitolokarnania, Arta-Preveza, Northwest

Peloponnese- and 7 offshore blocks-Katakolo, Patrikos Gulf, West Crete, Southwest of Crete, Block2, Block10, Ionian). Lessees include Greek (HellenicIQ Energy, formerly Hellenic Petroleum, in which the Greek State holds a 35.5% stake, Energean) and international oil companies (Total, ExxonMobil). The Greek State is estimated to receive more than 36 million Euro from signature bonuses, surface, and training fees in the period 2014-2027 (Tsani, 2021). At the same time the companies will spend at least 5 billion Euro on exploration (the actual expenditures, if incurred, will be much larger).

The aim of this brief is to complement the efforts of best practices identification and knowledge transfer between countries related to local content participation in energy projects. Towards this end, it has been completed a thorough systematic review of policies and relevant literature on local content approaches, with interest in the cases of Norway and Greece. In addition, it has been completed a survey of companies operating in the energy sector in Greece with the aim to identify challenges and opportunities for local content utilization in terms of both local labor skills and supply chain. The remainder of the document develops as follows: Next section briefly discusses local content in Norway and Greece with selected literature reference. Section 3 presents and discusses the project survey results. Last section concludes with some useful policy recommendations.

2. Local content in the energy sector: The case of Norway and Greece

Norway is one of the world's largest oil and gas-producing countries, and its oil industry has played a significant role in the country's economic growth and development. More recently Norway has emerged as one of the globally leading countries in the domain of renewable energy production. Norway is an exceptional example of developing domestically based competence in the energy sector and implementing local content policies at the initial stages of development of the oil and gas sector that have sustained a dynamic industrial and technological development (Heum, 2008). While currently there are no requirements for local content or specific localization requirements for suppliers to the Norwegian hydrocarbons and renewable energy industry, the development of the robust energy sector in Norway, owes much to the implementation of local content policies in the early days of the development of the industry (Aoun and Mathieu, 2015). EU regulations no longer allow for the implementation of policies that enable preferential treatment of local supplies and/or labor force. Yet policies linked to skills upgrade and

closer links of the R&D and higher education with investors and projects in the energy sector support the inclusion of local labor and supply chains in the energy projects, and through this, sustainable local socio-economic development.

Local content policies implemented in the early days of development of the oil and gas industry in Norway aimed at covering three main areas: local procurement of goods and services, technology transfer, and promotion of R&D activities (Heum 2008; Tordo 2013; Acheampong et al. 2016; Ramdoo 2016; Obiri and Bjeirmi 2019; Moses 2021). Local procurement policies encouraged the use of Norwegian goods and services in the energy sector, while technology transfer policies ensured the transfer of knowledge and expertise to Norwegian businesses, universities, and research institutions. One of the key incentives used in the petroleum sector in Norway was the focus on the production chain, which allowed Norwegian companies to participate in various stages of the production (Obiri and Bjeirmi, 2019). Foreign firms were required to transfer technology to their Norwegian partners, which helped build local capacity and expertise. This requirement was reinforced by the technical assistance provided by petroleum multinationals to Statoil and smaller Norwegian firms (CCSI, 2016). This arrangement fast-tracked the development of the domestic industry and encouraged Norwegian firms to become competent operators. Moreover, the obligation of firms to conduct at least 50% of the research required at local Norwegian institutions was a significant incentive (Moses, 2021). This promoted cooperation between local companies and academic institutions and supported the creation of skilled workforce.

The Norwegian government used licenses and agreements to target the training of Norwegian nationals and technology transfer arrangements to guarantee local content. The 1974 and 1979 licenses required licensees to provide training to Norwegians and hire a certain number of Norwegian government staff in their activities. The 1981 Model Technical Assistance Agreement required experienced oil companies to provide technical assistance to Norwegian operators to carry out their obligations under the Petroleum Production License. Similarly, the licenses stipulated that Norwegian staff should be employed to the greatest extent possible in oil activities. The licenses also included local procurement requirements in relation to Norwegian goods and services. The 1985 Petroleum Act further stipulated that the Ministry of Petroleum and Energy could implement additional regulations or impose additional requirements in any subsequent licenses to give effect to this provision.

Box 1: Local content and energy projects as drivers of local development- The case of Melkøya

Melkøya, an island in northern Norway, is home to the country's only liquefied natural gas (LNG) plant. The plant, owned and operated by Equinor (former Statoil), has been the subject of significant attention due to its innovative design (Equinor, 2007). Statoil implemented measures to encourage local value creation and strong support from the local community in Melkøya, identifying the possible effect of the project and its subsequent operation on the community. The development stage applied a large influx of workers, making it crucial for Statoil to effectively manage expectations and stakeholders. The company used three main strategies to conduct successful stakeholder management and local content: 1) supplier development, 2) collaboration with local stakeholders and authorities, and 3) research on the impact and extended effects. Although local suppliers faced technical challenges that exceeded their ability, the impact analysis showed that they still had a fair share of deliveries in the development stage.

Further, Statoil collaborated with schools and colleges to set strategy and chemistry classes at the upper secondary school in Hammerfest and agreements with higher education institutions. Statoil supported various areas such as sports, culture, education, environment protection, and humanitarian assistance. The population of Hammerfest has steadily risen throughout the period, demonstrating the success of the company with the local community (Holand and Rønning, 2016).

Melkøya LNG plant involves major construction not only on the island but also on the mainland. The license owners of Snøhvit are Norwegian companies, including Equinor Energy ASA (36.8%), Petoro AS (30%), TotalEnergies EP Norge AS (18.4%), Neptune Energy Norge AS (12%), and Wintershall Dea Norge AS (2.81%). These additional details provide a broader context for understanding the Melkøya case study and the significance of the LNG plant to the region's economy and energy infrastructure (Equinor, 2022).

The 1988 and 1991 Licenses required licensees to enter agreements in the form of the applicable model training of Norwegian personnel. Moreover, the 1988 and 1991 Model

Training Agreements concerning petroleum activities required foreign companies to allow Statoil's staff and other listed domestic companies to participate in their in-house training programs (CCSI, 2016).

The Norwegian licensing system employed a negotiated process by which political authorities decided the specific make-up of the joint ventures that secured a license. Rather than letting the companies decide by themselves who would join in bidding for a Norwegian production license, the authorities took responsibility for creating the joint ventures, and then used this responsibility to piece together license groups that could develop local competencies. In practice, this meant pairing up different companies as partners in a license group, and then distributing the voting shares of the license such that the state (and/or its NOC) controlled a majority within each license group. This allowed the state to prioritize its national oil company (Statoil), and require that other, more experienced, firms teach Statoil the “tricks of the trade” (Moses, 2021).

The rise and dominance of Statoil, as the national oil company, can be seen as an instrument that the authorities used to secure local content in Norway. Starting with the third allocation round (in 1974), the authorities introduced several additional measures that helped secure Statoil a privileged position in the Norwegian market. Different measures were used to secure Statoil's position: i) requirement that other firms train Statoil in the business, ii) allocation of a disproportionate number of licenses to Statoil, iii) provision of tax incentives which encourage investment in Statoil, and iv) the provision of technical assistance to Statoil. The preference for local firms was discontinued in 1996 due to EU legislation requiring equal access to all operators, regardless of origin.

As regards Greece, no local content policies are explicitly considered in the energy sector announced plans and/or granted licenses (e.g., hydrocarbon exploration). In the hydrocarbon sector, the ratified Lease Agreements aim for indirect economic benefits associated with human capital upgrade, labor markets development, public administration support, know-how transfer, research and development, increased demand for goods and services from local suppliers and employment opportunities for domestic workers. The Lease Agreements include terms according to which companies that have been granted the right to exploration and production in the Greek territory should contribute to the training of human resources and the upgrade of the public administration. According to the signed agreements, lessees have a contractual obligation to give preference to labor force coming from Greece and the European

Economic Area (EEA) and to prefer services, materials, equipment, consumables, and other goods originating from Greece and the EEA, provided that the price, quality, delivery time and other conditions are comparable to those offered internationally (Tsani, 2021).

In addition to the provisions of the Lease Agreements, the economic framework of the exploration and production activities is set by that Presidential Decree 127 of 1996. The Decree sets an upper limit on expenditures incurred abroad in relation to expenditures incurred in Greece. According to this, the amounts of salaries of directors or employees abroad and of the general administrative expenses of the Contractor's own offices for the services rendered by them in respect of contractual work, may not exceed 10% of the respective expenses incurred in Greece. This requirement further supports the use of local content. With regards to the renewables energy sector, the National Energy and Climate Plan (NECP), the Greek government's strategic roadmap regarding the attainment of specific energy and climate objectives by 2030 refers to goals of inclusion of the local communities and benefiting them from the energy plans. Yet not further information or specific policy targets/actions are described.

The comparison of policies and options that Norway and Greece record show that in the case of Norway the development of the local content to cater for projects in the energy sector can be traced at the early intervention policies in support of the local supply chain, labor force and research and development and in the early policy support to Statoil, now Equinor, to establish itself as a world-class energy producer. Overtime, regulatory requirements have been removed opening local content to (international) competition, ensuring thus that protectionism will not hamper the competitive stance of domestic labor force and supply chain. The early support of local R&D and connection of the energy sector with universities, research centers and the domestic technology and innovation ecosystem has spurred a strong local provisioning network to the energy sector and related investments in Norway.

In the case of Greece, no regulatory requirements can be set that give preferential treatment to local content. This is neither compatible with the EU legislation, nor desirable as it may hamper the (international) competitiveness of local content (an issue discussed in large in the local content literature). Nevertheless, early interventions in the education, technology and innovation ecosystem in Greece that can develop it to a strong

input provider to energy projects and investments in the decades to come could improve the prospects of local content in the energy sector in Greece.

The legislation in place makes provision for the training of the local labor force. It can further encourage collaboration between (foreign) investors in the energy sector, Greek Universities, and R&D centers. These can improve the quality and skills of the local labor force, research and innovation ecosystem and make it capable to provide competitive inputs when needed (think for instance future developments in offshore wind). Moreover, policy efforts can aim for greater integration of the local content to the international supply chains in the energy sector. Energy projects usually utilize a well-established international supply chain, in which often local suppliers may find it difficult to integrate. Information/connection activities that can close the information gap between investors/foreign companies and the local suppliers can improve the prospect of the latter to be employed in ongoing and future energy projects.

The need for early interventions in the education, training, research, and development system and addressing of information asymmetries are also highlighted from the results of the ENERGO project survey, which are presented in brief next.

3. Local content capacity and prospects in Greece

To better understand the potential for local content in energy projects in Greece and to derive useful insights for policy consideration, the project partners have implemented an online survey targeting a total of 139 companies, as identified by the project team, working in the energy sector in Greece directly (e.g., RES installation, oil, and gas) or indirectly (e.g., provision of legal services). The survey ran from November 21st, 2022, to February 22nd, 2023. The response rate was 36.7% (51 responses). Survey results are presented next. The results are based on the answers of 37 male and 14 female respondents (72.5% and 27.5% of the total responses received respectively). Most survey participants fell within the age range of 36 to 55 years, with 6-15 years of experience in the sector (49% of total responses with regards to the years of professional experience).

Figure 1 Survey results on domestic and EU suppliers



Figure 2 Survey results on local labor force



Responses from companies related to wind energy and oil and gas sectors accounted for 51% of total responses received (26 respondents). 15.7% of responses (8 respondents) came from the solar energy sector. Construction, law, and trading activities linked to energy sector accounted for 3% of responses received. 86.3% of the responses were received from participants working in private companies.

Public-private partnership was reported in 4 responses (7.8%) and 3 responses were received from publicly owned companies (5.9% of total responses). Most respondents come from small-sized companies with 0-49 employees (56.9% of total responses). Large-sized companies with more than 250 employees make up 25.5% of the total responses received, while medium-sized companies with 50-249 employees regard 17.6% of the total responses received. 60.8% of the respondents hold higher management positions.

Middle management positions make up 23.5% of the respondents, followed by technical staff and administrative support, accounting for 5.9%, and lower management which accounts for 3.9% respectively of respondents.

With regards to local sourcing of goods and services, participants agree that investments in the energy sector increase demand for local goods and services. Most respondents agreed that their company benefits directly from investments in the energy sector in Greece. Respondents indicated that Greek and European suppliers offer good quality goods and services and are generally considered reliable (Figure 1).

Responses related to employment and energy sector investments show that respondents generally agree that investments in the energy sector can create job opportunities in Greece and that the unemployment rate in Greece will decrease because of such investments. Companies give priority to the employment of local labor force and make provisions for the employment of local labor force. However, responses reveal concerns regarding the availability of qualified labor force in the local economy and the technical and scientific skills required by their companies (Figure 2).

Survey results indicate that investments in the energy sector in Greece are perceived as growth and employment creating opportunities for companies active in the field. Local suppliers are considered comparable to EU and international suppliers, standing thus well against competition. As regards the local labor force, responses indicate that the identification of qualified local labor force is a major issue for companies in the field. To address this obstacle policy efforts can target education and training systems in Greece and connection of well qualified labor force with energy sector labor requirements.

4. Conclusions and policy recommendations

The success of local content policies in Norway is not a static outcome, but a continuous process of institutional changes and policies that link energy sector developments to the local labor force and supply chain. What characterizes the success of policies in Norway is the locally developed ability to manage all the required parts of the energy industry as well as the active targets to promote education, technology research and development through ever encouraging cooperation between the energy sector companies and the local Universities and R&D providers. Local content policies in Norway implemented through a range of measures and encouraged collaboration, built local capacity, and helped Norwegian firms become competent operators in the global market.

Greece has the potential to become an important energy player in Europe. On the downside, Greece is recovering from a severe economic crisis, prolonged by the Covid-19 pandemic, that has led to under-investment in core infrastructure and brain-drain effects. Energy developments in the country can support economic recovery and growth through investments, employment generation, innovation, and technology transfer. In this process, local content policies can be supportive. Looking at the experience of Norway and at what are identified as challenges in the Greek market for companies operating in the energy sector, as identified through the survey completed for the ENERGO project, it emerges that policies that target education, skills upgrade and closure of the information gap between local labor force, local suppliers and operators in the energy sector can reverse “brain drain” (at local and national level), provide a stimulus for innovation, employment and local activity.

While these arguments provide ground in support of local content policies, they also raise issues of timely and proper implementation. Local content requirements (legal/contractual binding targets) may work counterfactually by posing impediments to trade, competitiveness, market efficiency and sustainability. Thus, further recommendations to policy making regard the identification of balance between local content targets, obstacles to competitiveness and potential impact on market efficiency. Balanced local content policies should aim for:

- Integration of local targets and priorities with the wider national and energy sector development policies
- Interventions that can address information asymmetries (e.g., regulatory interventions or creation of information hubs through the Greek Public Employment Service)
- Timely education measures to address skills shortage, and linking of the energy sector with the local R&D capacity
- Promotion of geographical and/or sectoral clusters at local, national and/or regional level that can further support the employment of local supply chains and labor force as well as the dissemination of technology, know-how and best practices.

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