

## Finding the true north for local content definition in the nuclear industry

*Establishing principles for quantifying localization*



Many emerging nuclear countries aspire to track and report the localization progress in their nuclear programs, yet there is no standard definition of how to calculate and maximize the value of local content. While in some markets localization measures converge on the cost of local supplies, others tend to develop rather complex models to capture the actual “added value.” Defining an accurate local content ratio with a simple-to-administer methodology is essential to oversee the domestic industry’s contribution to the nuclear supply chain. In this Viewpoint, we explore the dimensions along which local content ratios could be defined and discuss key areas to consider in establishing a robust, applicable methodology.

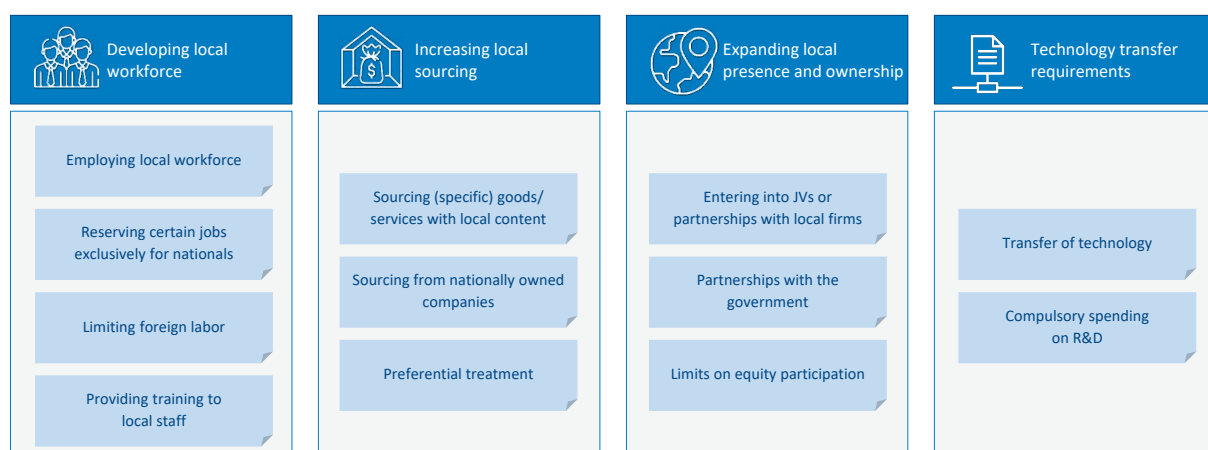
### Local content policies – what’s available on the menu?

In practice, “local content” is understood as a set of policy instruments decision makers use to ensure that a certain proportion of factors such as labor, supplies of goods and services, or technology are sourced from within the domestic economy. Policy makers design and implement various measures to achieve and incentivize localization, and these measures can be mapped to four main objectives (see figure below):

**1. Developing the local workforce** at various levels of competencies and different stages of the industry value chain.

- 2. Increasing the participation of domestic industries** by stimulating access to procurement, encouraging local sourcing of goods and services, and requiring minimum levels/percentages of local sourcing.
- 3. Expanding the local equity and presence** to support economic diversification and widen the tax base.
- 4. Transferring technology and intellectual property** to local firms and conducting R&D activities locally to maintain the competitiveness of the domestic industry and to foster technology absorption.

Local content policies address different objectives of promoting the local industry



However, the implementation of these measures could result in over-appreciating the local content, a trap some emerging nuclear markets have fallen into in the past. To safeguard against such mistakes, markets can employ a tailored methodology for local content creation.

## Design principles to define local content

Arthur D. Little has designed such a methodology grounded on four overarching design principles:

### 1. Insightful and accurate measurement

The local content ratio should yield spot-on results to track the status on localization goals. The defined local content ratio measures should adequately distinguish the contribution of domestic and foreign companies without impeding the principles of fair trade.

### 2. Feasible to administer

Local content measurement requires data collection and handling, and even auditing of suppliers, which may consume significant resources and time. An optimal level must be established between the complexity of the measures and the level of feasibility to administer the overall localization tracking process.

### 3. Consideration of other local content practices in the country

Many nuclear newcomer countries have already established localization methodologies in other industries (e.g., pharma, automotive). The nuclear localization measurement should ensure consistency with the country's existing applications, while taking advantage of well-implemented policies. Since privileged treatment to nationals and domestic local content policies are mostly prohibited by World Trade Organization rules and free trade agreements, existing applications establish reference points. Thus, the methodology should reflect already outlined domestic approaches by the country's legislative framework.

### 4. Alignment with national nuclear energy policy

Local content measurement quantifies the goals set by the overall localization strategy and the national nuclear energy policy. Hence, the local content ratio should prioritize the functional focus areas set out in the nuclear policy, such as nuclear education and training and R&D.

## Effects of different metrics on local content

Local content definitions can vary from simple company registration or ownership requirements to more complex formulations such as "added value" within the country.

In a hypothetical scenario, Arthur D. Little measured local content for three suppliers:

1. **An importer with 100% local equity** employing a local workforce.
2. **A service provider established in a foreign country with an office registered domestically** and with a limited national workforce.
3. **A goods manufacturer with 25% of local equity**, employing a national workforce but importing raw materials for the production of goods.

The scenario compared the effects of metrics in the following situations:

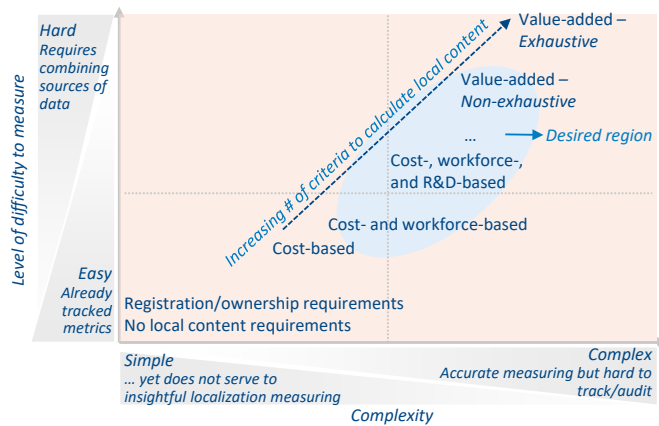
- If local content is defined by **the company's registered office address**, then all suppliers could legitimately yet misleadingly report their goods and services as 100% local.
- If local content is defined by the **rate of local ownership**, the importer company and the goods manufacturer could report 100% and 25% local content, respectively, while the service provider would not qualify for any local content.
- Similarly, if **the cost of goods** were defined as the only qualifying local content, the only local content reporting entity would be the manufacturer, and the definition would not capture the local content of services nor the added value delivered by the local workforce.
- If local content is defined by a **value-added formula**, which calculates the value add to the domestic economy by adding subcomponents (e.g., the value of the locally originating raw materials and components, direct labor costs, direct overhead costs, R&D expenditures), then each of these suppliers could report a different level of local content in line with their contribution at the local level.

The analysis of this scenario suggests that a value-add-based calculation methodology provides a more granular level of local content, thus providing more accurate insights on the localization progress. However, value-added methodologies are more complex to piece together, requiring centralized governance for data collection and handling from the stakeholders.

## Balancing the complexity and feasibility

Decision makers need to agree on a set of optimal criteria for efficient localization measuring as illustrated by the matrix in the figure below.

Local content metrics by complexity and measurability



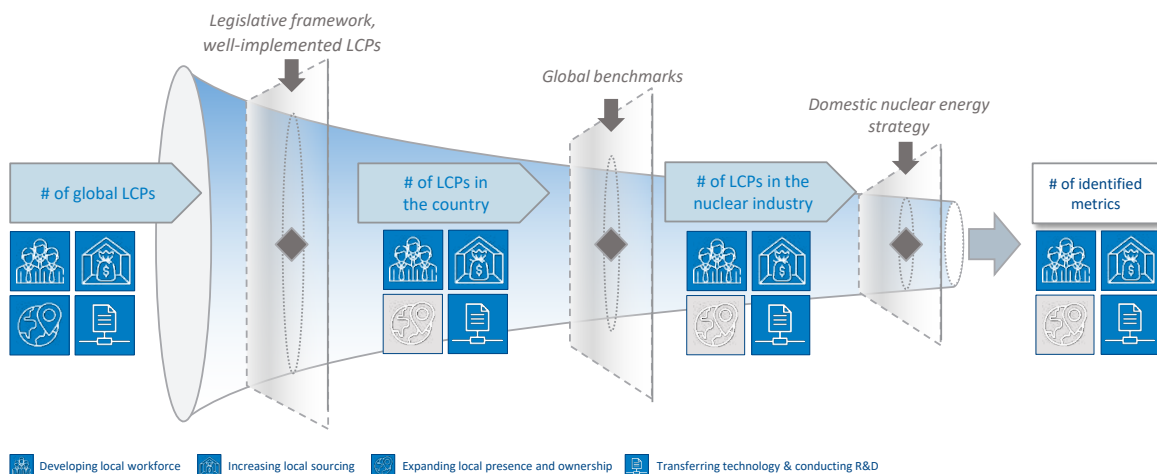
Source: Arthur D. Little analysis

While registration, ownership, or cost of goods-based local content measurements are simple to administer, they might yield misleading results or might fail to define the localization goals. In contrast, calculating value-added local content metrics is too complex, as the increasing number of criteria makes local content measuring less feasible. Thus, an accurate combination of metrics is critical to define local contribution.

## Identifying metrics to define local content

Global, nationwide, and industry-wide practices could be filtered down to a short list of local content policies (LCPs) and relevant localization metrics could be identified. As an example, utilizing a funnel logic shown in the figure below, Arthur D. Little filters its library of globally applied LCPs by reviewing current practices in the national legislation and leveraging its nuclear industry LCP

Local content long- to short-list



Source: Arthur D. Little analysis

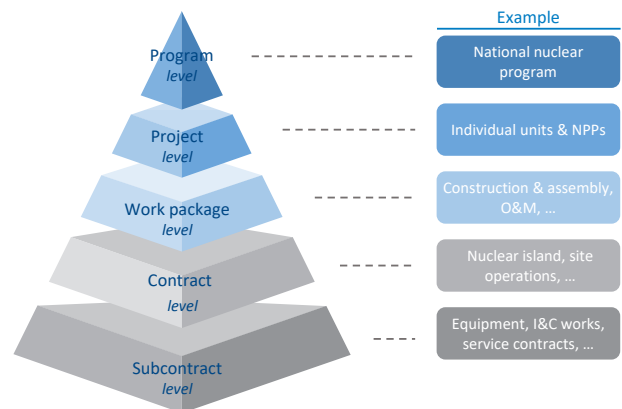
benchmarks to further refine the applicability of local content measures.

Policies and frameworks, such as national nuclear energy policy, nuclear industry goals, and the nuclear supply chain development roadmap, can also be leveraged to complement the filtered metrics to mirror nuclear energy strategy to localization measuring.

## Levels of localization

Once stakeholders have identified the appropriate local content definition, they will need to consolidate quantification of the measures upward, from subcontract and contract level to project and program level (see figure below). This will require localization measuring at each level, as individual levels provide distinct insights into the localization progress:

Localization levels



Source: Arthur D. Little analysis

- **Subcontract-level localization** will provide the **most detailed information on the localization** efforts and bottlenecks.

- **Contract-level localization** will quantify and illustrate the **localization efforts on a transactional basis**.
- **Work package-level localization** monitoring provides localization data across key domains and **reveals capability gaps and requirements**.
- All **previous levels are consolidated** into the National Nuclear Program level, with a bird's-eye view on **localization efforts over the project timeline**.
- Finally, the **overall performance of the localization program** is assessed at the **program level**, which is **reported to key decision makers, who signal regulatory changes**, if necessary.

The measures and calculation methodologies will inevitably evolve over the stages of the nuclear lifecycle, considering the maturity of the National Nuclear Program, the size of the nuclear power plant (NPP) fleet, and the development stage of the local nuclear supply chain.

## Conclusion

Depending on the localization targets, there is no one-size-fits-all approach to measure localization throughout the nuclear value chain. Recommendations to policymakers include:

- 1. Take advantage of well-implemented local practices.**  
Domestic suppliers are generally accustomed to working with the available set of policies. With the help of a guiding framework, existing industrial practices can be sufficiently aligned with nuclear program goals.
- 2. Walk the fine line between complexity and feasibility.**  
Local content measurement should be able to adequately quantify the progress in localization, yet the granularity level of the proposed methodologies should only be transparent enough to create an attractive local nuclear supply chain. Crossing the line will result only in ambiguity and deterrence for local suppliers.
- 3. Tie up the loose ends.** Defined local content methodologies must be supported by a robust process landscape and supplier monitoring tools. Processes should include the selection and qualification of local suppliers, establishing local content monitoring processes, and systems with well-defined KPIs to measure the local content performance of the supply chain.

## Contacts

### Austria

virag.bela@adlittle.com

### Belgium

baes.kurt@adlittle.com

### China

harada.yusuke@adlittle.com

### Czech Republic

vylupek.lukas@adlittle.com

### France

bamberger.vincent@adlittle.com

### Germany

kruse.michael@adlittle.com

### India

maitra.barnik@adlittle.com

### Italy

caldani.saverio@adlittle.com

### Japan

harada.yusuke@adlittle.com

### Korea

son.chulseung@adlittle.com

### Latin America

monzon.daniel@adlittle.com

### Middle East

merhaba.adnan@adlittle.com

### The Netherlands

eikelenboom.martijn@adlittle.com

### Norway

thurmann-moe.lars@adlittle.com

### Poland

baranowski.piotr@adlittle.com

### Russian Federation

lubuzh.pavel@adlittle.com

### Singapore

ito.yuma@adlittle.com

### Spain

gonzalez.juan@adlittle.com

### Sweden

thurmann-moe.lars@adlittle.com

### Switzerland

kruse.michael@adlittle.com

### Turkey

baban.coskun@adlittle.com

### UK

white.nick@adlittle.com

### USA

guzman.rodolfo@adlittle.com

## Authors

Michael Kruse, Chuck Goodnight, Dan Scholz, Dr. Sinan Dogusoy, Melis Cinar

## Arthur D. Little

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