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How to avoid a green resource curse?

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.

How to avoid a green resource curse?

Lessons from a decade of research on the
emergence of knowledge service providers in Latin
America's natural resource industries

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Outline

- Context, why is so important now
- Conceptual framework
- Results (3 types)
 - Barriers, different types
 - Strategies
 - Unique capabilities
- Implications and conclusions

Context (1)

Growing Concerns over a Green Resource Curse

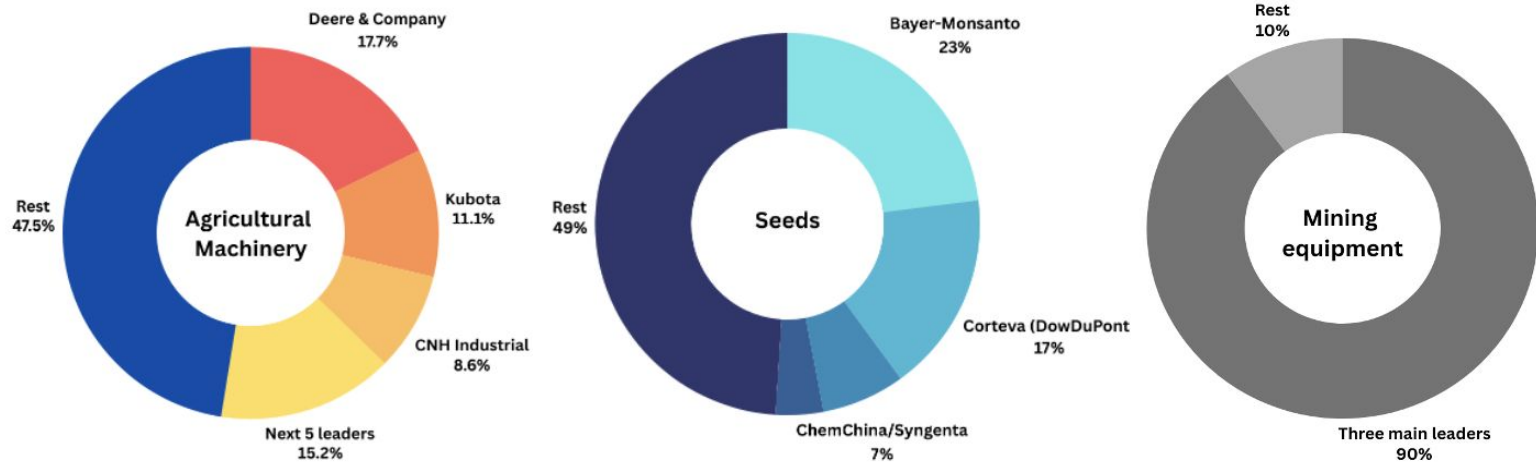
- Rising demand for commodities may negatively impact resource-rich countries.
- (Economic) Linked to historical challenges: Dutch disease, economic enclaves, and declining terms of trade.

Rethinking the Economic Resource Curse in the 2000s

- 2000s: resource curse challenged by new tech and market opportunities in NR sectors.
- Research shows rising innovation and deverticalisation by large companies, opening space for knowledge suppliers.
- NR industries tied to local geological and ecological factors, limit global tech standardisation.
- Local suppliers could leverage these specificities to innovate by adapting and creating technologies suited to local needs

Context (2)

Global market concentration of first-tier suppliers in sample NR sectors in 2020-2021:
agricultural machinery, seeds, and mining equipment.



Research Questions

How do knowledge suppliers emerge and develop in resource-rich, low- and middle-income countries (LMICs)?

What types of enterprises capitalise on the opportunities presented by natural resource (NR) expansion?

What are the main entry barriers they face when attempting to enter, remain, and grow as suppliers to NR industries?

How have "successful" domestic suppliers managed to overcome these barriers, and what strategies and capabilities have they employed?

Conceptual Framework

- We combine insights from innovation, business and GVC literatures
- We distinguish barriers and strategies paying attention to two types of capabilities:

Innovation Capabilities

Skills and knowledge related to technology acquisition and R&D, as well as to organisational, managerial, design, production, and marketing functions, all aimed at supporting product and service development

Negotiating Capabilities

Capacities to navigate extreme power asymmetries through alliance-building and strategic political efforts to secure stronger positions in global value chains and decentralised markets not linked to global value chains

Methodology

Research Focus: Knowledge Providers in Latin America

- Multiple case studies on the agricultural, mining and oil and gas sectors
- More 75 case studies from Argentina and Chile (Perú and Brazil)
- Interviews with key informants, company owners and employees
- Analysis of secondary information from press, existing research and reports and quantitative data

Results: three main findings

1. **Barriers:** We identify barriers faced by domestic suppliers, distinguishing different types of **barriers to entry**, **barriers to survive** and **barriers to grow**.

Barriers to entry	Barriers to stay/survive	Barriers to expand/grow
1) Information asymmetries	4) Power asymmetries (with NRs producers and first tier suppliers)	7) Over-adaptation and specialisation
2) Getting noticed	5) Precarious contracts and lack of long-term guarantees	8) Changing demands and technologies
3) Pre-established relationships with global suppliers	6) Arm's length-relations: weak collaboration and low integration	9) Low-level of <i>political capabilities</i>

Results: Illustrations of Barriers: Entry and survival



Getting Noticed

Metalworking,
machinery parts,
repair services

250 employees
High technological
capacity and experience in
agriculture

"We started making attempts everywhere, until finally we began to work with the Chilean company Orica, a first-tier supplier... based on our work, when an Australian official from the mining company saw what we had done and he called us to do an expansion of the mine"



Precarious Contracts

Metalworking,
machinery parts, repair
services

70 employees 2015
9 employees 2019

Regarding a rotation head *"...that development was a waste of money because we made investments in a product that is not sold anymore. Those five parts were used, they were discontinued, and then the entire project was discontinued"*

Results: Illustrations of Barriers: Expansion



Over-adaptation

Agricultural machinery,
sprayers

Las Rosas, Santa Fe
Sprayers,
400 employees
20% of the Argentine market
subsidiary in Brazil with 100 employees
Sold to John Deere

- 2 * 4 transmission (best for Argentinian landscape)
- Adapted cabins
- Sold to John Deere and began process of standardisation



Political capabilities

Seed breeding, production,
commercialisation

700 employees
Seeds adapted to each region
Advanced biotechnology tools
They don't have patents. however, 55%
of the Argentine soy market and 60% of
southern Brazil

- Unable to expand into genetically engineered (GE) market
- Lack of capabilities and resources to navigate regulatory framework and defend genetic event patents from foreign biosafety agencies

Results: three main findings

2. Strategies: Successful suppliers have used three strategies to overcome these barriers

Proximity

Taking advantage of localisation by increasing the service component based on:

- Proximity
- Speed
- Knowledge of local conditions
- Cost flexibility

Adaptation

Taking advantage of local specificities of natural resources:

- By creating products/services adapted to local specificities
- By creating tailor-made customizations for a reduced number of producers

Frontier innovation

Taking advantage of new knowledge:

- By upgrading current technologies and practices
- By creating new market niches and advancing the technological frontier



Proximity



Adaptation



New Knowledge

Examples

Proximity



- **San Juan**
- **Metalworking: manufacturing, maintenance and repair**
- **160 employees**
- First tier supplier, operates inside the mine.
- Started with a crisis in Barrik, it was there to solve it
- It is entering Chile

Adaptation



- **Iquique, Chile**
- **Water pumps for mining**
- **77 employees**
- Pumps highly adapted to region's high altitude low-pressure environment
- Significantly more energy-efficient than standardise pumps



Innovation



- **Argentina**
- **Seeds and genetic events**
- **640 employees**
- R&D intensive
- Linked with universities and local public research institutes
- Gene Discovery and Isolation
- +750 patents, commercial presence in +45 countries, listed in stock exchange since 2019
- One that provide resistance to water stress

Results: three main findings

3. Unique Capabilities

- **Less advanced companies** aiming to enter as suppliers face challenges related to classical technological and complementary capabilities. These firms need to develop technological, managerial, organisational, design and production capabilities
- **More advanced suppliers**, while still facing challenges related to technological and classical complementary capabilities they also deal with additional obstacles related to capture the rents from their innovations
- ***To deal with these obstacles they need market shaping, regulatory and political capabilities***

Results: three main findings

3. Unique Capabilities

Pricing and benefit distribution: It is challenging to price innovative products and services whose performance features are difficult to ascertain.

Client Convincing: Convincing clients, particularly lead and first-tier firms, to adopt new ideas and try innovative solutions is difficult. Negotiating spaces for experimentation is crucial.

Contract Negotiation: The governance mode of the GVC plays a significant role in shaping these relationships and determining the distribution of benefits.

Regulatory Compliance: Capabilities to address environmental and biosafety regulations are critical in NR-related activities.

Intellectual Property Management: Handling intellectual property rights (IPR) issues, conflicts, and regulations is crucial.

Standardisation: Firms must learn how to transition ideas from pilot stages to products by meeting demand requirements, again through negotiations with clients.

Obtaining the social license to sell their new technologies,



Seed company

750+ employees

Founded in 1982

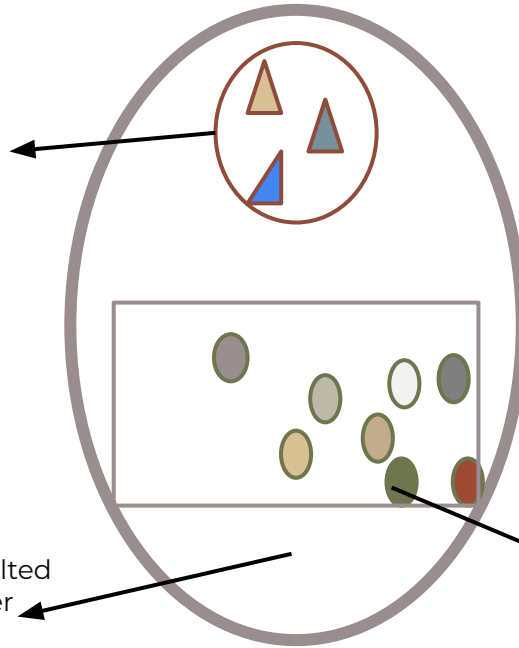
- Seeds adapted to each region
- Advanced biotechnology tools
- No patents. However, 53% of the Argentine soy market, supplies 20% of soy varieties globally, **and 45% of global soybean production use GDM genetics**
- Subsidiaries in 15 countries: Argentina, Brazil, Bolivia, Paraguay, Uruguay, South Africa, USA, Italy, among others
- Best adapted to survive and thrive in Argentina's local environmental conditions

Difficulties (or reluctance) in entering areas based on new technologies due to a lack of regulatory and political capabilities

Example of Adaptation Seeds

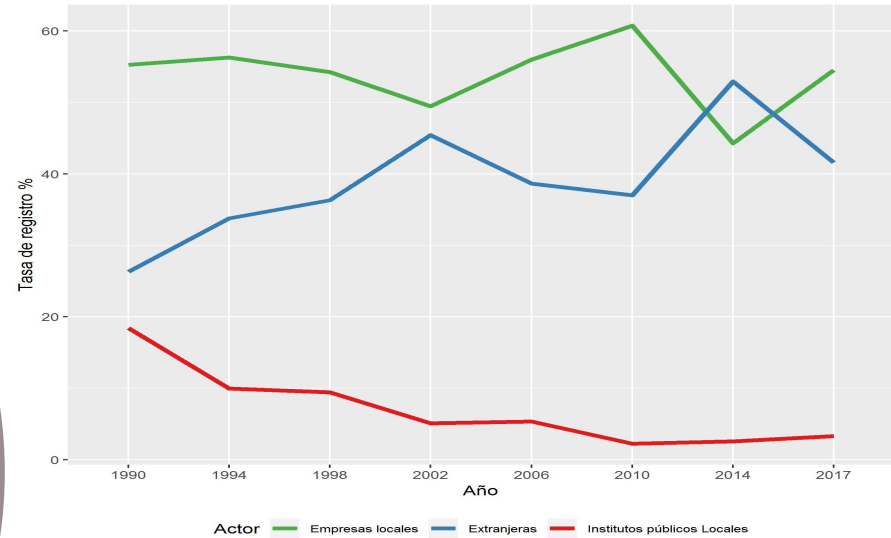
MNCS BUSINESS

New characteristics obtained through **genetic engineering**. Standardized, a few. Large development and introduction costs.



Thousands of other features resulted from thousands of years of farmer improvements.

Tasa de nuevos registros de Soja, Maiz, Trigo, Arroz, Algodón y Girasol
Registros en el RNC por año (1990-2017. Periodos agrupados de 4 años)



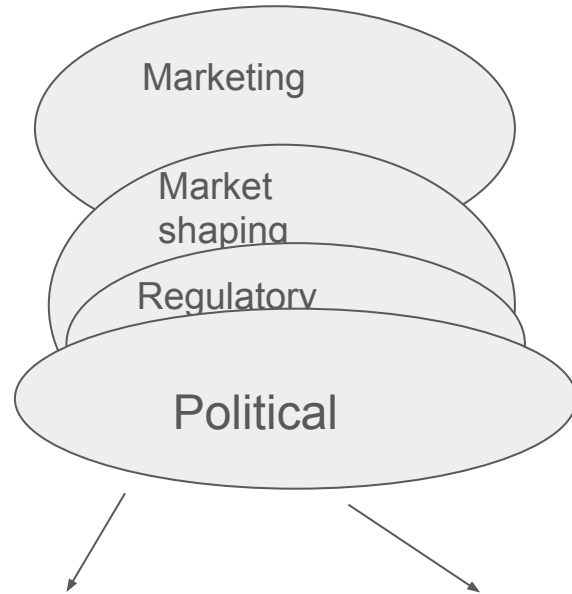
Fuente: elaboración propia en base a datos de INASE

DOMESTIC FIRMS BUSINESS

New characteristics obtained by advanced forms of **cross breeding** (resistance to diseases, changes in growth habits, etc.).

Political capabilities, related concepts

Complementary External



National

International

Political capabilities are the abilities of the firms to exert influence on the political space - the public sphere.

Very related concepts: market shaping and regulatory capacities

FINAL REMARKS

- We need to identify and distinguish barriers and strategies for entry, survival, and expansion to adapt policies.
- Local content policies address entry challenges, but companies face additional barriers after entering.
- Suppliers often leverage local specificity to enter, survive, and expand—numerous examples exist.
- Some suppliers have moved from local to regional and global markets, based on their local experience.
- Challenge: Innovative suppliers face "political" barriers; we need a better understanding of how to support them in developing political capabilities.