CLEANER PRODUCTION: BRAZILIAN EXPERIENCES AND PERSPECTIVES

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CNI 70 ANOS
Confederação Nacional da Indústria

FIERGS SENAI
Centro Nacional de Tecnologias Limpas SENAI - CNTL

UNIDO
UNEP

Brazil's National Cleaner Production Centre CNTL

Implanted in July 1995

MISSION:

To contribute to Sustainable Development, with emphasis on **Cleaner Production**

UNIDO / UNEP
Cleaner Production Centres Network

42 NCPCs

CNTL was implanted after a call from UNIDO/UNEP for institutions in developing countries candidate to establish a National Cleaner Production Centre.

SENAI Rio Grande do Sul presented a proposal and was then selected to nest Brazil's NCPC.

The institution SENAI

National Confederation of the Industry - CNI

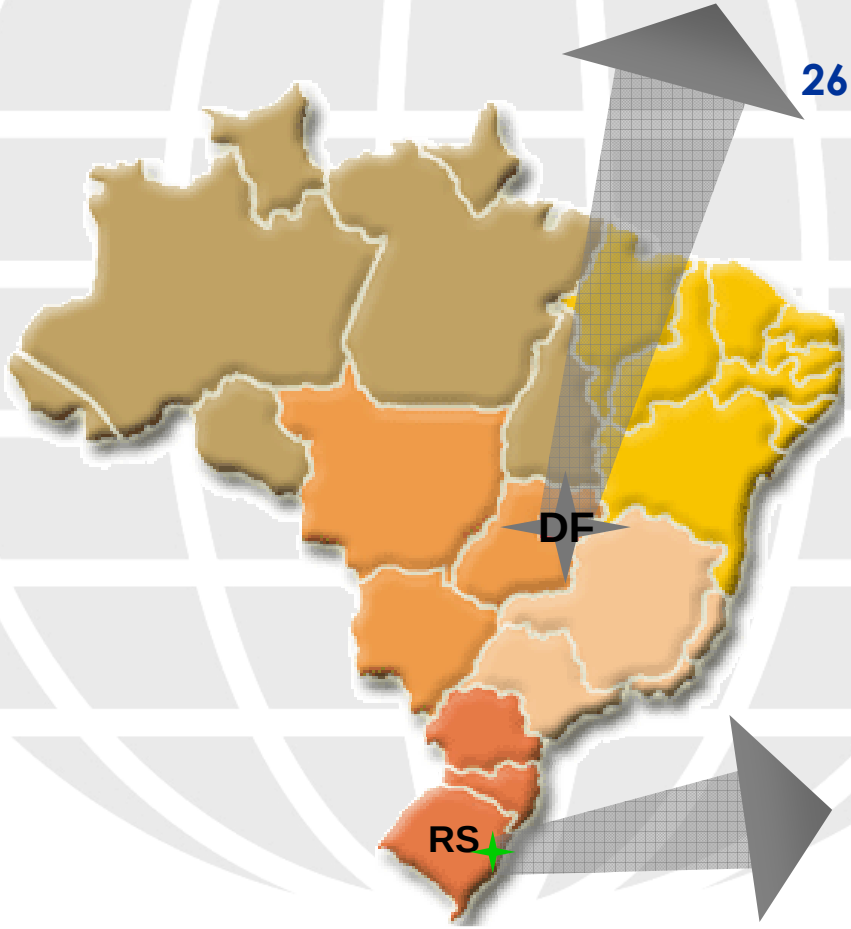
CNI System comprises

26 Federations of Industries (each state)

SENAI – Professional Education, Technological Services, Information for industry

SESI – Industry social services

IEL – Industry-University link



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SENAI-RS

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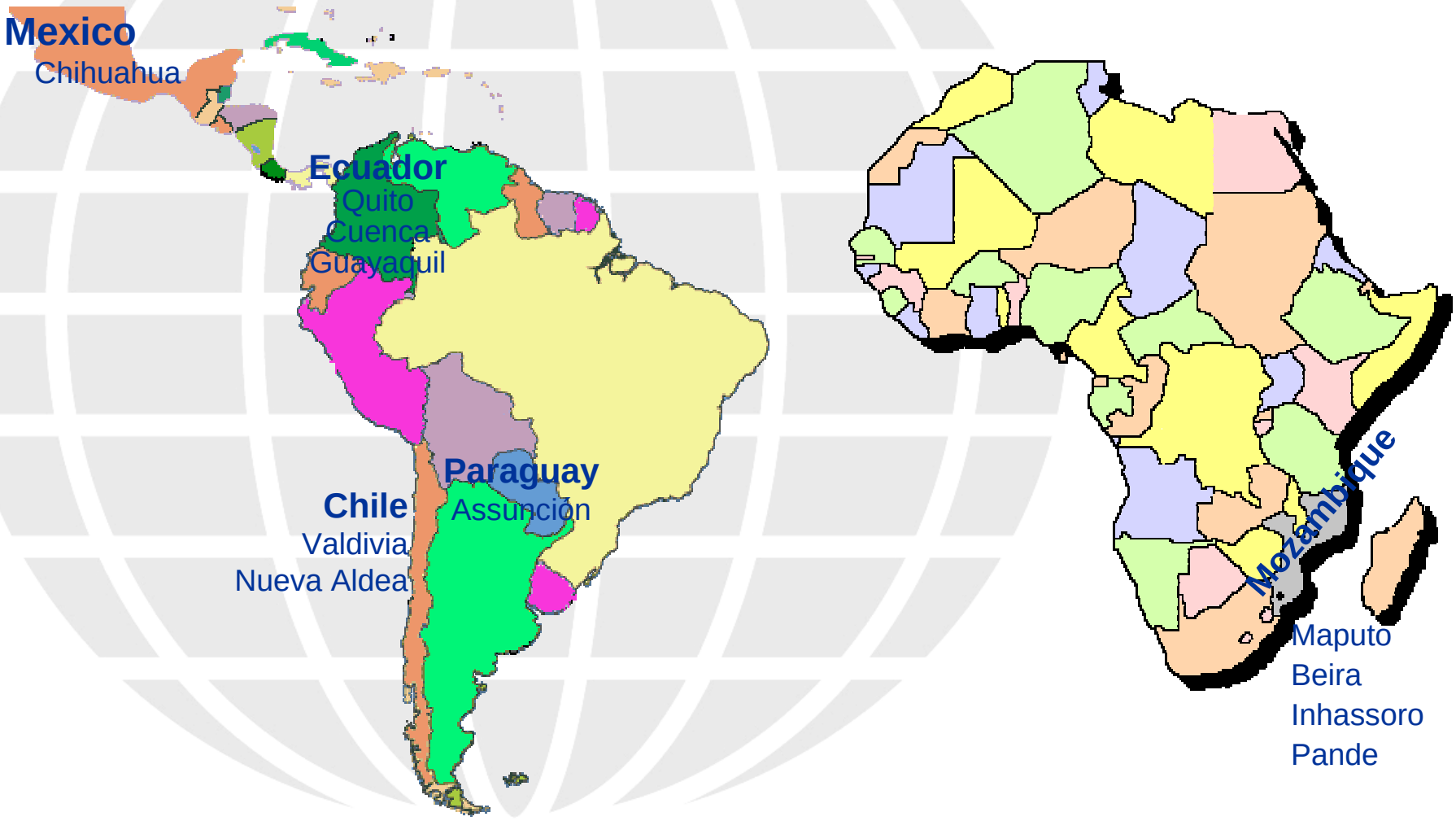
Areas of activity:

- Technological Information
- Capacity-building of human resources
- Technical and technological consulting
- Support to the establishment of Environmental Policies

Activities of CNTL in Brazil

Activities in Latin America and Africa



Traditional Approach – end of pipe

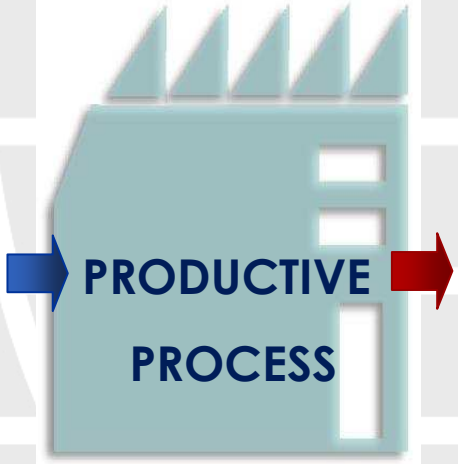
- Waste is generated!
- How to treat it and dispose?

ENVIRONMENTAL COSTS

Energy

Raw material

Water



Solid residues

Liquid effluents

Atmospheric emissions

Treatment of

* Residues

* Effluents

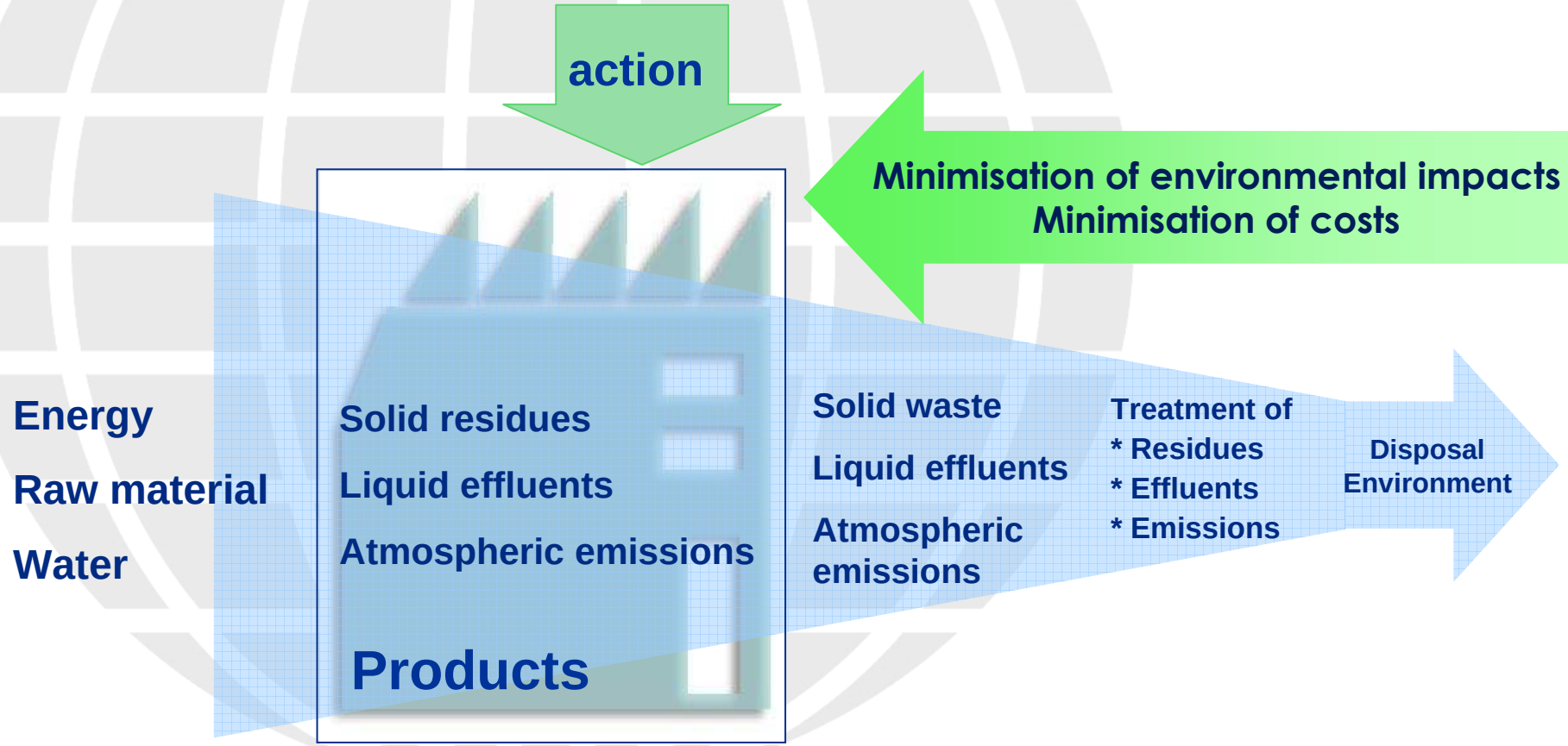
* Emissions

Disposal

Environment

action

CLEANER PRODUCTION APPROACH



What is Cleaner Production?

Undertakes a methodology that applies

- technical
- economic
- environmental

criteria

Aims at reducing

- waste generation (raw-material consumption)
- water consumption
- energy consumption

Brings

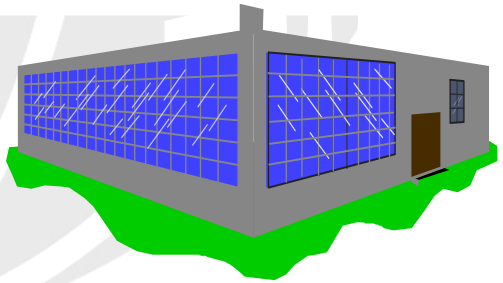
- environmental
- economic
- health and safety

benefits

CP Concept

Cleaner Production is the technical, economic and environmental evaluation of a productive process and the subsequent identification of opportunities to boost greater efficiency with lower environmental impact.

CLEANER PRODUCTION



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Case Study 1 – food sector (small company): production of bread and confectioning

Before

High consumption and waste of flour in mixing process.

Oven fuelled by petrol liquefied gas.

High energy consumption in freezing chambers.

Picture: Gas cylinders stored on the premises (hazard risk).

Case Study 1 – food sector (small company): production of bread and confectioning

After

- Reduction in flour consumption and in flour waste generation in the mixing process by training and adopting best practices.
- Reduction of power consumption through regulation of temperature in chilling chamber.
- Substitution of petrol liquefied gas for electric power in the oven.
  Electric power in Brazil has a clean matrix (hydro-electric generation).

Future use of gas compartment as a room for preliminary weighing

BENEFITS ACHIEVED

Economic: Savings in flour costs = R$ 2.327/year (€ 964)
Savings in energy costs - R$ 6.000/year (€ 2.485)

Environmental:

- Reduction in flour consumption in mixing – 2.300 kg/year
- Reduction in flour waste generation – 368 kg/year
- Use of clean energy for oven operation
- Reduction in energy consumption.

Case Study 2 – metal-mechanical sector (large company): agricultural machines

Before

Steel sheet cutting with guillotine machines.

Amount of waste generated:
226,54 kg per machine manufactured.

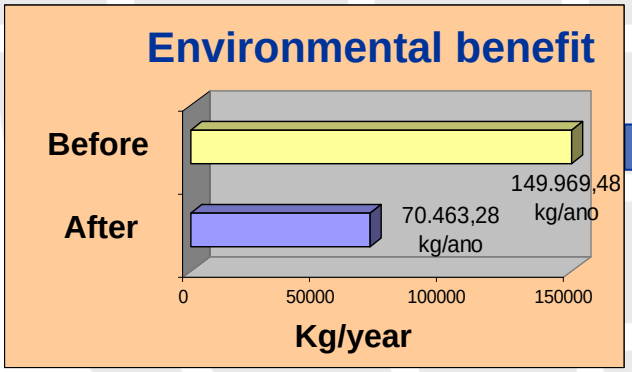
After

Steel sheet cutting with punching machines.

Case Study 2 – metal-mechanical sector (large company): agricultural machines

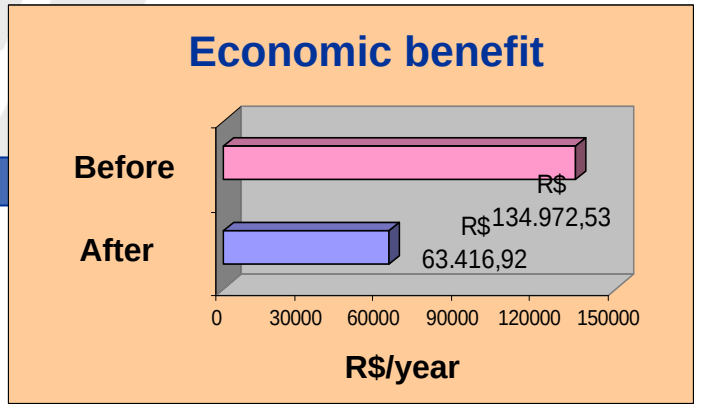
BENEFITS ACHIEVED

Amount of waste generated: 106 kg per machine manufactured, nearly 47% reduction in relation to the former process.



79.506 Kg/year

R$ 71.555/year (€ 29.633)



Case Study 3 – CP implementation in SMEs of the oil & gas supply chain

CP implementation in a group of suppliers of PETROBRAS, the Brazilian oil company: diverse SMEs (rubber components; valve maintenance; metal milling, moulding and casting; insulating materials; thermal/electrical resistance; industrial automation)

CASE STUDIES	INTERVENTION	INVESTMENT (R$)	ECONOMIC BENEFIT	ENVIRONMENTAL BENEFIT
Minimisation of rubber waste	Optimisation of production techniques	null	R$ 32.908 / year (€ 13.268)	Estimated reduction of 5.040 kg per year in rubber waste generated
Reduction in Al waste generation	Process modification and best practices	null	R$ 1.913 / year (€ 792)	Reduction of raw material (Al) consumption in 412 kg and of BTE oil in 249 kg per year
Reduction in raw material losses, reworking in the production of metal parts	Corrective maintenance of lathe and laminating machine, analysis of production procedures, establishing inspection points and assigning responsibilities for their implementation	R$ 4.200 (€ 1739)	R$ 92.400 / year (€ 38.266)	Reduction in raw material waste, in energy consumption and manpower for reworking

Case Study 3 – CP implementation in SMEs of the oil & gas supply chain

case study:

Reduction in the generation of Al waste by means of modifications in gates and risers

Before **After**

CNI Cleaner Production Network

An initiative of CNI and SENAI

Goal: a CP Nucleus at each industry federation (26 states)

Nowadays there are CNTL and 5 nuclei

Financial support from CNI and SENAI National

Technical support from CNTL

In implementation

Strategic Map of Industry – CNI System
Programmes vs. Objectives Impact Matrix 2007-2015

BASES FOR DEVELOPMENT	STRATEGIC PROGRAMMES	Environmental Certification	Environmental Certification	Cleaner Production	Cleaner Production	Environmental Planning	Fostering best management practices in industry	Environmental Planning and environmental planning (ZEE)	Definition of an efficient energy matrix	Environmental regulations
Social and environmental responsibility	Promoting environmental management in industry									
	Developing a cultura for social responsibility in industry									
Innovation	Stimulating innovation activity in companies									
	Fostering technolgy centres and mechanisms for access to knowledge.									
	Development of technological infrastructure									
Entrepreneurial management and productiveness	Increasing productiveness and quality in industry.									
International insertion	Disclosing the image and brand of Brazilian products abroad									
	Improving public-private articulation for increased efficiency in international trade negotiations									
	Developing a culture for exports and enhancing companies' exporting capabilities									
Expansion of the industrial basis	Fostering de development of micro, small- and medium-sized industries									
	Promoting a competitive industrialisation of less favoured regions									
	Stimulating and strengthening of production chains and local productive arrays									
Availability of resources	Developing a new financing pattern for the productive sector at internationally competitive costs									
	Fostering capital markets									
	Stimulating the attraction and retrieval of human resources									
	Promoting rational use of natural resources									
Infrastructure	guaranteeing logistics efficiency so as to support the Brazilian industry growth									
	Guaranteeing energy availabity at competitive prices									
	Guaranteeing continuation of telecommunications infrastructure development									
	Ensuring the availability of basic sanitation infrastructure									
Education and health	Guaranteeing the quality of basic education									
	Promoting the entrepreneurial culture and dissemination of free initiative and of entrepreneurial ethics values									
	Strengthening professional and technological education									
	Adapting university education to economic needs and knowledge of productive systems									
	Promoting digital inclusion									
	Guaranteeing access to a good-quality health system									
Institutional and regulatory environment	Reducing the tax load, both simplifying and improving the tributary system									
	Guaranteeing effective regulatory landmarks and well defined regulation systems									
	Matching laboural law and competitiveness needs									
	Compliance to regulations and competencies of environmental regulation bodies									
	Promoting the defense of competition and intellectual property									
	Promoting the reduction and debureaucratisation of the State machine, guaranteeing itsransparency and efficiency in the use of public resources									
	Fostering the continued improvement of the politic system									
	Guaranteeing public safety									
	Guaranteeing juridic safety and judiciary efficiency									
Entrepreneurial leadership	Consolidating a strategic vision towards industry and improving the industrial representation system									
	Participating actively in the strutcturation of public									

Promoting environmental management in industry

Promoting rational use of natural resources

FIRST MAGNITUDE IMPACT
SECOND MAGNITUDE IMPACT

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Perspectives

Project: Cleaner Production Evaluation System

(pilot project conclusion in Oct, 2008)

Objectives:

- **Methodology for Cleaner Production evaluation in companies;**
- **Definition of indicators of continued improvements in Cleaner Production**
- **Creation of a CP Label for acknowledgement of companies that present continued improvements (one-year validity);**
- **Possibility of constant monitoring of indicators and company performance.**

CNTL SENAI/UNIDO/UNEP

Danke!

Obrigado!

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