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**Building skills to support  
Argentina's mining sector**

By

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



Secretaría de Coordinación de Política Minera  
**Ministerio de Energía y Minería**  
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## Building skills to support Argentina's mining sector



POPULATION **43 Mn**  
MEDIAN AGE **~30 YEARS**  
**57% OF POPULATION IS WORKING AGE**

Mining impact : 0,7  
GDP



HIGH QUALITY  
HUMAN CAPITAL

#1 UN Human Development Index  
score in Latin America  
~110,000 higher education graduates per year  
#1 english proficiency in Latin America



**50 AIRPORTS**  
20 International



**14 PORTS**  
with 2.2 Mn containers



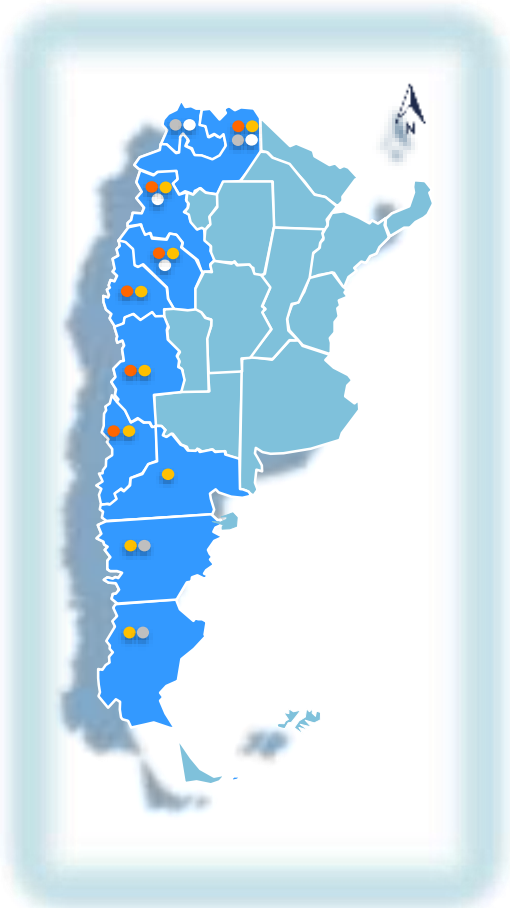
**182,000 Km**  
routes



**25,023 Km**  
railways, with 8,568  
million passengers per  
km

World class science and technology institutes:

- ❖ Consejo Nacional de Investigaciones Científica y Técnicas (CONICET)
- ❖ Instituto Nacional de Tecnología Industrial (INTI)
- ❖ Instituto de Tecnología Minera (INTEMIN)
- ❖ Servicio Geológico Minero Argentino (SEGEMAR)



## Copper

## Silver

- 20th world producer of copper and 5th in Latin America, having a production potential eight times higher than the present one, which would place it 6th in the world ranking.
- 10th world producer of silver and 5th in Latin America, with the potential to be one of the world's top five
- 10 Advanced projects

## Gold

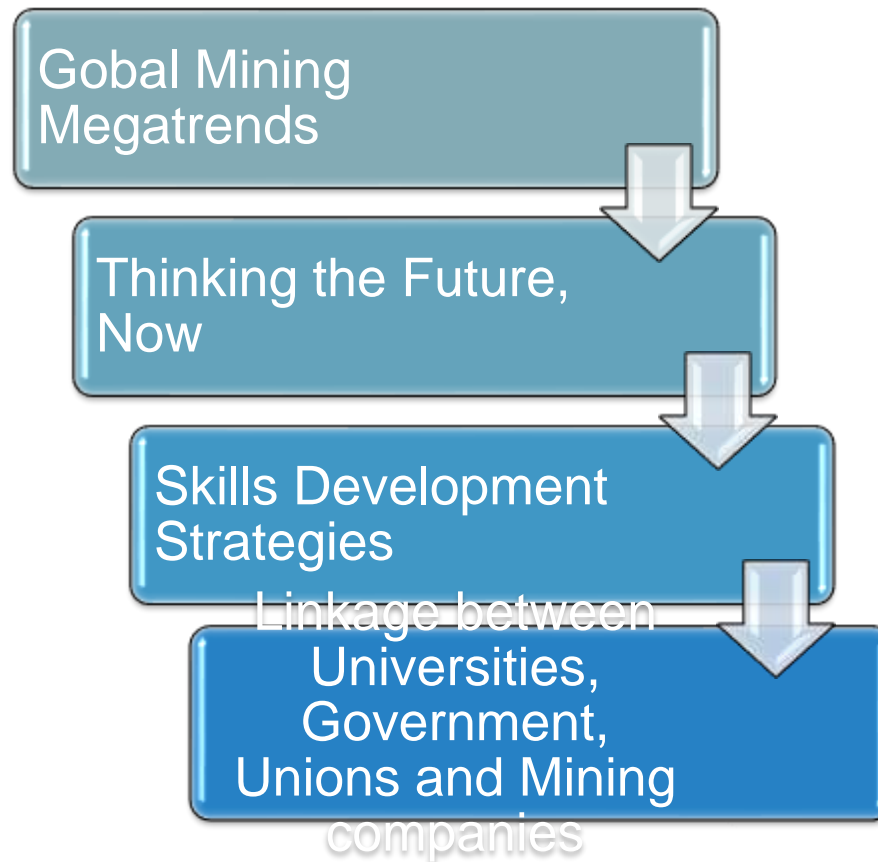
## Silver

- 13th world producer of gold and 4th in Latin America, having the potential to stand amongst the ten most relevant gold producers on a global scale
- 8 Operating mines
- 2 mines under construction
- 10 projects from advanced exploration to feasibility
- 17 intermediate exploration projects
- 181 projects in early-stage exploration phase.

## Lithium

- Lithium in 23 salars
- 4th largest lithium reserve in the world. Current production ranks the country 3rd on a global level and 2nd in the region.
- 2 Operating mines both expanding productive capacity
- 2 mines under Construction
- 10 projects from Feasibility to Advanced Exploration
- 40 projects in Early-Stage exploration phase.
- 6 Exploration prospects in pegmatites

Source: Subsecretaria de Desarrollo Minero



### The Innovation imperative

A drop in commodity prices, and rising costs, declining ore grades and concerns about decreasing productivity are compelling the mining industry to focus on operational costs



### Rethinking Our Reserves

Rates of discovery for high-quality and accessible ores are declining and not keeping up with depletion. Solutions that help exploration under cover, extend the life of a mine and optimise recovery.



### Plugged in, Switched on

Digital technologies, data analytics and automation along with greater mobility and increasing connectivity are creating exciting opportunities for the mining industry.



### New supply, New Demand

Increasing urbanization and rapid development of emerging economies will continue to spur demand for mineral resources, which will be supplied from developing nations and new geographic domains through technology advancements.



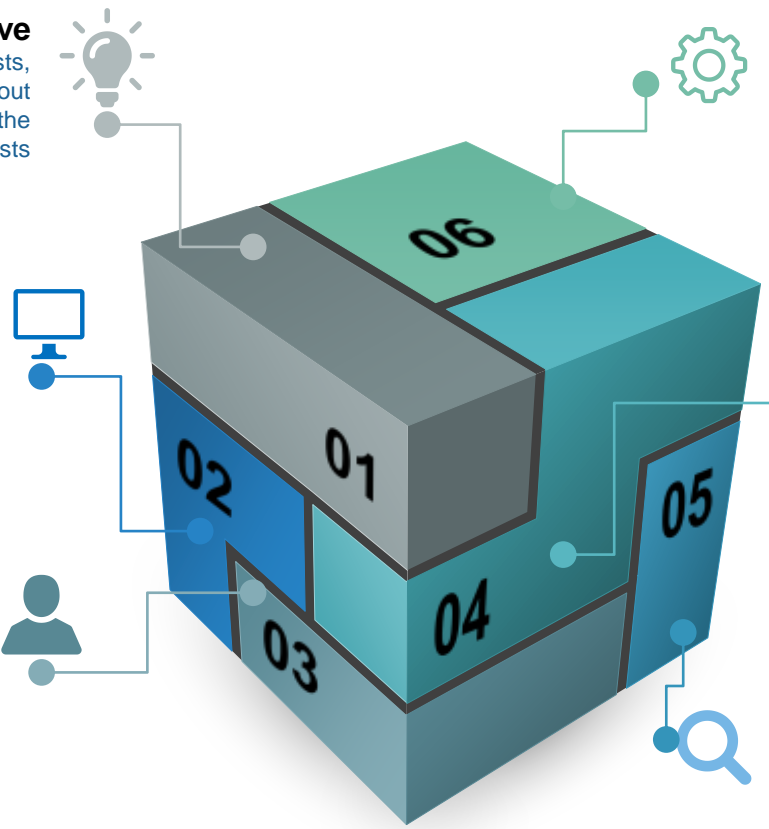
### The Era of Accountability

Mining companies will move forward as good corporate citizens, where accountability and environmental success exceeds expectations, strengthening community engagement and support for existing and new projects into the future



### The Knowledge Economy

As emerging economies continue to develop their mining sectors, support in developing applicable skills, services and technologies will be required for efficient and sustainable exploitation of mineral reserves.



Source: CSIRO.



- Structured and equipment based training pathway from new equipment through to operator training.
- 24/7 and 52 weeks a year running operations implies flexible timing for training
- Key operators and trainers train other operators, and the equipment becomes embedded into ongoing operations. operations.
- Moving on to more complex roles and pieces of equipment, means better salary or improved job conditions.
- Training on site (often in remote locations).



- **Teamwork**
- **Autonomous maintenance**
- **Environmental issues**
- **Automation**
- **Health & Safety:**
  - Nutrition
  - Diseases prevention



### Modular component design

Plug and play maintenance

### Less people in the field/ On site

- Remote monitoring and control
- Health and Safety
- Cost
- Multi skilled roles
- Less environmental impacts

### Technical support equipment

- Intelligent equipment
  - Remote and real time diagnosis
- Interoperability
  - Augmented reality
  - Drones
  - Uses of Apps
  - Internet of things
  - Big data



***It is necessary to provide very specific and focused training about mining equipment***

- Electronics
- Automation
- Robotics
- Mechatronics
- Electromechanics
- Hydraulics
- Pneumatics

### **Maintainers capable of:**

- Operate and Repair equipment that repair equipment
- Think in modules than in spare parts
- Mantain equipment off site

In the past, the whole process was to finding the resource, developing the mine, extracting the metals—and then starting the process all over again

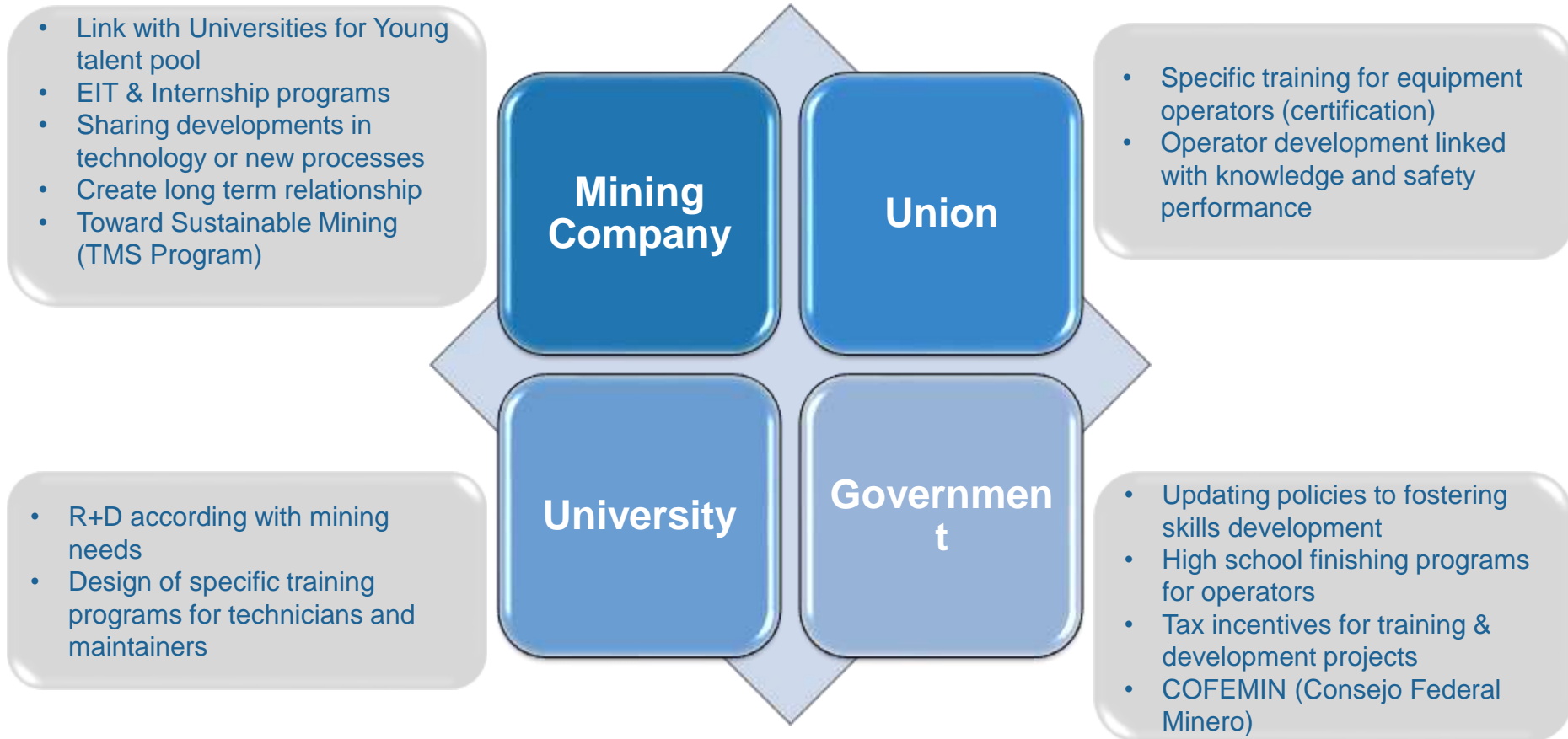
Managers were concerned about technical aspects of the job and to get the ore out of the ground as quickly as possible

Managers have simply grown through years of experience “on the job.”

Production, production, production...bonus!!!



- **Adapt to a leadership gap at companies that are advancing technical specialists who may be lacking in the strategic and leadership qualities necessary to lead project development and operations in challenging locations**
- **A shrinking pool of key technical talent throughout the industry**
- **The social, environmental and regulatory dimensions of operating large-scale mining operations**
- **the health and safety issues associated with those operations**
- **The need to balance short-term results vs. taking a long-term view of the business**





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