

**FORUM FOR HIGHER EDUCATION,
RESEARCH AND KNOWLEDGE
REGIONAL REPORT ON LATIN
AMERICAN COUNTRIES**



Comments

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Latin America is a heterogeneous region regarding the development of S&T:

- ❑ Large countries with a strong research tradition (like Mexico or Brazil), but with a very unequal distribution of income;
- ❑ Small but relatively equitable countries, like Costa Rica and Uruguay.
- ❑ More 'modern' countries, like Argentina and Chile, with a strong tradition in research;
- ❑ Very poor countries, like Bolivia, Panama or Paraguay with less than 8 hundred active scientists.
- ❑ And we have the case of Cuba.

Human resources; a paradox:

- ❑ scientific communities are far from being homogeneous (even though in almost all the countries, it is difficult to establish the exact number of real scientists conducting research (figures could be estimated in a range that varies from 1 to 3))
- ❑ there are at least two different worlds: the `scientific elites`, well integrated in international cooperation and networks, and “others” (in Mexico, for instance, the elite included in the SNI represents around 1/3 of the total).
- ❑ the academic degree reached by scholars is very poor: several countries have less than 10% of PhD within R&D personnel, and in 2007 in Argentina more than a half of researchers do not have a post graduate degree (Master or PhD)

However...

- Where do they work? (and where will they work?)
- “Brazil is training more than 10-12 thousand PhD per year, and 30 thousand with a Master degree. This figure is growing at a 10% per year. However, in Brazilian firms (including private, state and multinational) there are just 3 thousand PhD and Masters doing R&D. This means that the next year we could have –if the demand grows magically at 10%- a demand of around 3 hundred. But we will form around 33 thousand PhD and Master graduates in ‘hard sciences’!”

Science and technology governance:

- ❑ Almost all the countries have a complex set of institutions, from Ministries to National Councils;
- ❑ Nonetheless, they still appear to be more influenced by the logic of local scientific communities than a real “State policy” oriented to an effective use of locally produced knowledge.
- ❑ In several countries, the set of policy institutions plays more a bureaucratic than a real role in promoting and orienting S&T.

Evaluation systems I: researchers but not research.

- ❑ Most countries (specially the more advanced ones) have instruments to evaluate the performance of scientists (Mexico, Argentina, Chile, Venezuela). But evaluations are more focused on “classical” indicators, like papers indexed in databases, and almost no attention is paid to the contribution made by research to attend social or economics goals

Evaluation systems II: researchers but not science and technology policies.

- In spite of the recent experience of Mexico, there are practically no instruments to evaluate the results of S&T policies. If one reads the accumulation of “National plans” over the time, with their ambitious goals, we might think that we are facing an ideal world, with real ‘knowledge societies’

On “meta review” report

- 3 clusters of countries or 4?
- The report also speaks about 3 important conditions to fully have a “modern” science and technology system:
 - a) A core relatively stable and well-resourced scientific institutes;
 - b) Consistent government and industry investment in these institutes;
 - c) Economic and political stability. Science governance allows the autonomous and independent operation of research.

3 conditions (for “cluster 3” and 2 bis):

- The first condition is a relative one: certainly, the institutions enjoy a growing stability compared to the past. But are they well financed if we compare them with developed countries? Are they all able to develop useful science adequate to help industry or to attend other social needs?

3 conditions:

- The second condition is relatively true if we are speaking about government funds oriented to 'elite' institutions, not for the entire system. However, industry investment continues to be notably scarce, with the possible partial exception of Mexico and Brazil and Chile...

Function of research?

- The autonomy of research community is, at the same time, a pre-condition and an obstacle to the social function of science: indeed, during the most part of XXth century –naturally, excluding frequent periods of dictatorships- the scientists have enjoyed of a large degree of freedom to choose their research subjects, they have actively participated in the establishment and development of research and science policy and institutions, they have defined their own strategies of international collaborations, and so on.

Function of research?

- The autonomy gave rise, in almost all countries, to a phenomenon we described as a “new international division of scientific work”, where scientific elites located in most advanced (emerging) countries are producing knowledge which is used by large networks headed by ‘central’ groups, often related to enterprises or ‘regional consortia’ (European or American)

“SNI” policies (plus-salaries to scientists)

- The SNI policies might be evaluated. I see several questions we have to formulate: a) have they contributed to a real professionalization of the scientific communities?; b) have they strengthened the capacity of the ‘elites’, discriminating among ‘international integrated’ and ‘the others’? Have they turned more bureaucratic the strategies of scientists, prevailing activities subjects to evaluation more than other activities?

Finally, I would like to add an other condition to those proposed:

- “The development of a scientific and technological culture all over each local society”. In other words, to break the barrier established by scientists and national states protecting S&T from any ‘external’ intervention. This could help to develop among different social actors the capacity to formulate demands in order to use locally produced knowledge to attend social needs.

THE END