

STI Road Maps for Agenda 2030

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Fiocruz strategy for Agenda 2030



Ministério da Saúde

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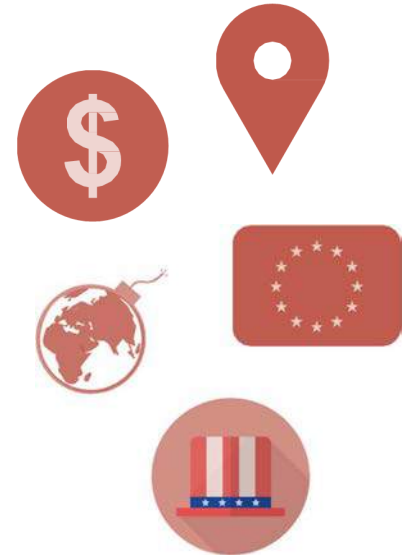
Development, Innovation and Social Change

*“Economic development can be defined as a process of **social change** by which the growing number of **human needs**, preexisting or created by change itself, are satisfied through a **differentiation in the productive system** generated by the introduction of **technological innovations**”*

(Furtado, 1964)

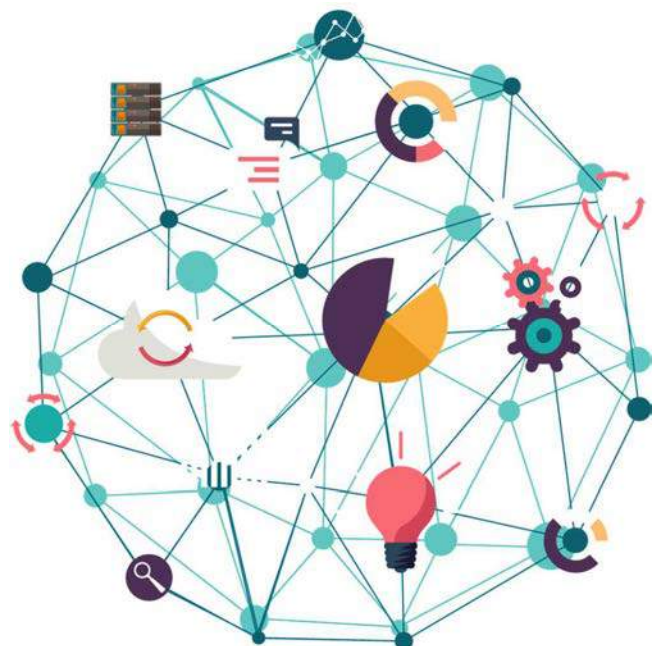
Issues on STI Global Dynamics

- Asymetries on the prioritization decisions, R&D expenditures, sustainability of innovation systems and knowledge appropriation;
- Local and Global Governance;
- Intellectual Propriety vs Universal Rights and Common Goods;
- Ethical Criteria;
- Knowledge Ecology, Open Sources, Co-Design and Co-Production



STI and Agenda 2030

- Social and Cultural Context;
- Diverse sources of knowledge;
- Financing and Innovative Governance;
- Innovation Ecosystems and Road maps;
- Social and Emerging Technologies;
- Public perception and citizen commitment in STI policies;



The matrix of social inequality

Model to advance the implementation of the agenda 2030

Structuring axis

- Socioeconomic level
- Genre
- Race and ethnicity (indigenous and Afro-descendant)
- Age (life cycle)
- Territory

Areas of rights in which they affect

- Income
- Work and employment
- Social protection and care
- Education
- Health and Nutrition
- Basic services (water, electricity, housing)
- Participation and decision-making

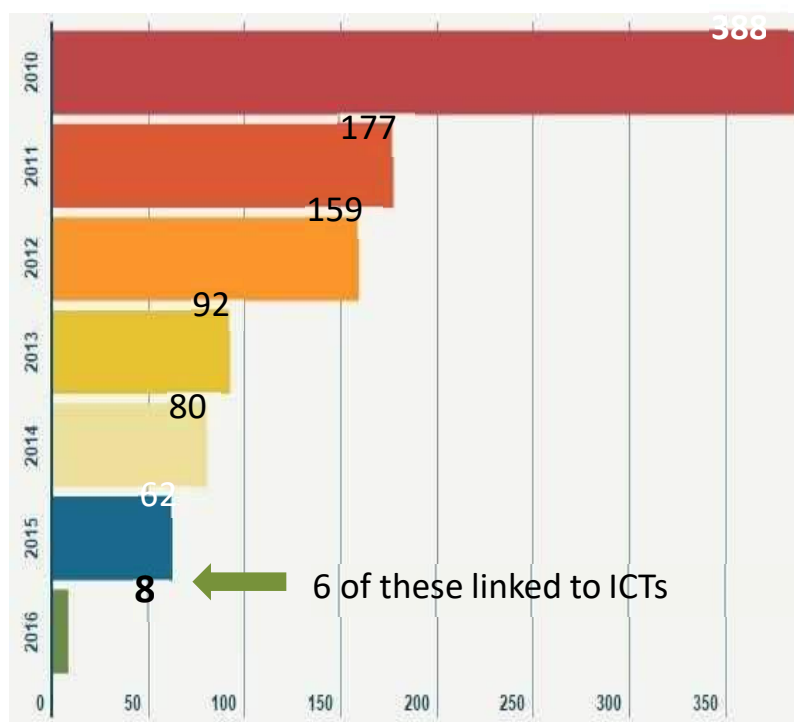
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WORLD: NUMBER OF BILLIONAIRES OWNING AS MUCH WEALTH AS THE POOREST HALF OF THE WORLD, 2010-2016

(Billions of dollars)



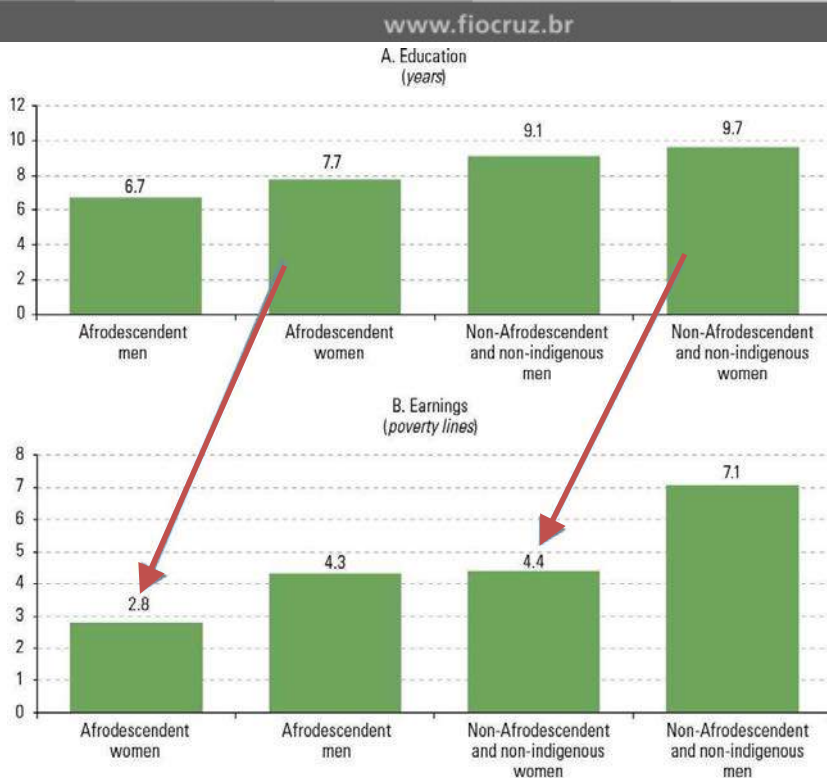
Source: Euronews, [online] <http://www.euronews.com/2017/01/16/oxfam-eight-men-own-as-much-wealth-as-poorest-half-of-world-s-population> on the basis of Oxfam, "An Economy for the 1%", 2017 [online] https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99percent-160117-en.pdf.

The matrix of social inequality

Views on inequity cannot ignore the necessity to overcome asymmetries of access to basic goods and services. Indicators of **multidimensional chronic poverty** (World Bank) which incorporates access to education, access to infrastructure services, housing and basic consumer goods, shall be adopted together with gender and race.

To have – or not to have – access to water, sanitation, energy, education, health, housing and goods such as refrigerators, telephone, among others, are not peripheric dimensions of inequities. The urgency an priority of access of the most poor to these rights may occur concomitantly with the structural changes that demand time of implementation, that is , which occur in the long run.

Faces of Inequalities in Brazil
Tereza Campelo



Source: ECLAC, *The Social Inequality Matrix in Latin America* (LC/G.2690(MDS.1/2)), Santiago, 2016.

Small differences in poverty measurements

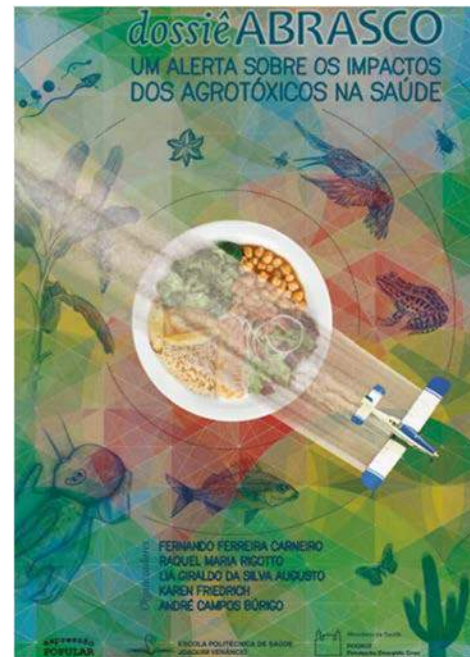
between men and women, but large gaps in the labour market

LATIN AMERICA (14 COUNTRIES): POPULATION WITHOUT OWN INCOME BY NON-CONTRIBUTORY GOVERNMENT TRANSFER BENEFICIARY STATUS AND SEX, AROUND 2014 (Percentages)

Popular scientific knowledge

Ecology of knowledge

- science and knowledge: collective health in search of new Paradigms
- Popular Epidemiology and Participatory Research community-based
- Let us listen to the voices of territories: paths to dialogue



Social Technology

•Observatory of Sustainable and Healthy Territories of Bocaina (OTSS)

In the territory where the OTSS operates, there are about 50 traditional communities of caiçaras, indigenous and quilombolas living and resisting

•Healthy and Sustainable Territory Project (PTSS)

Promote the sustainable use of territories with local and participatory actions, associated with emancipatory formative processes, including health and sustainability as promoters of development.

•Data Integration Center and Healthy and Sustainable Territories of the Semi-Arid (CIDACS/TSSS)

Sociotechnical networks of the local actors for the measurement of the health determinants in articulation with the ODSs

Methods mapping of risk situations and social and environmental vulnerability



STI Scenario - Brazil

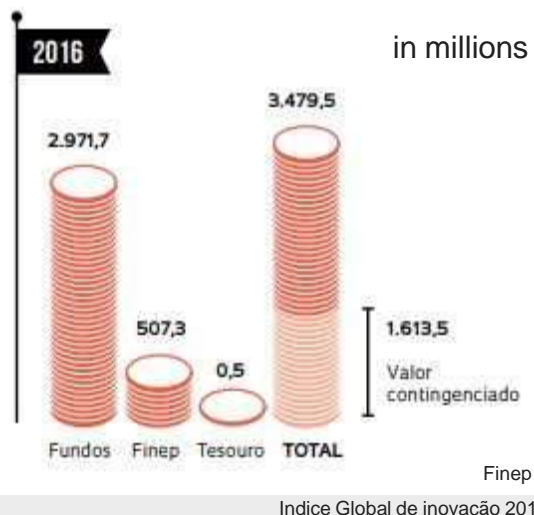
Law 10,973, of 2004, and amended in the Legal Framework (Law 13243 of 2016)

Population - 209,6 M
GDP - U\$ 1.769,6 B

Global Innovation Index (out of 127):

● Score: 33.1 (0-100) ● Ranking: 69 (0-100)

	S	R
Institutions.....	51.8	91
Human capital & research.....	35.9	50
Infrastructure.....	48.3	57
Business sophistication.....	37.2	43
Knowledge & technology outputs	18.9	85



Innovation in brazil

STRENGTHS

- Innovative in health policies and strategies
- Basic research of excellent quality and evolving positively
- Structured PG system in STI and public health
- Little affected by the 'brain-drain'
- Promising Innovation Law

WEAKNESSES

- National System of Innovation deficient (still in the "Mode 1" of knowledge generation)
- Slightly innovative in technological areas
- Little investment in S & T by the private sector
- Lack of clear industrial policies on health
- Poor educational system

Innovative Developing Countries (IDC)

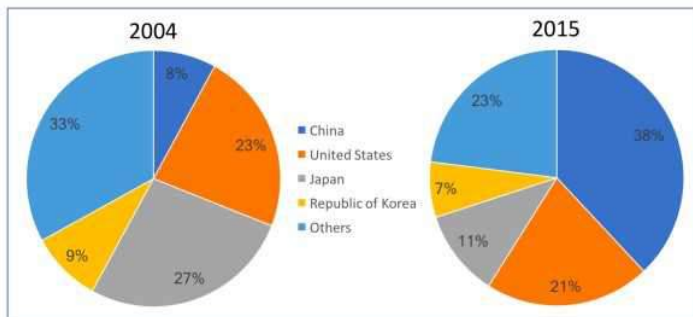


Fig 5. Distribution of total patent applications in the world, 2004/2015. The top 4 country patent offices are indicated. Source: WIPO Statistics (World 2004: 1.574.200 patent applications; World 2015: 2.888.800 patent applications). Available in: <https://www3.wipo.int/ipstats/keysearch.htm?keyld=221>. Access in: August 18, 2017

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US Patents, GDP percapita and US patents per GDP/capita (2003)

	Country	US Patents	GDP per capita	US patents per GDP percapita
1	USA	99,386	36,006	2.760
2	Japan	37,779	31,407	1.203
3	India	444	487	0.912
4	China	724	989	0.732
5	Germany	13,110	24,051	0.545
6	Korea, Rep	4,246	10,006	0.424
7	France	4,682	24,061	0.195
8	Canada	4,410	22,777	0.194
9	UK	4,803	26,445	0.182
10	Italy	2,206	20,528	0.107
11	Israel	1,392	15,792	0.088
12	Brazil	209	2,593	0.081
13	Sweden	1,771	26,929	0.066
14	South Africa	142	2,299	0.062
15	Australia	1,174	20,822	0.056
16	Switzerland	1,845	36,687	0.050
17	Belgium	995	23,749	0.042
18	Finland	1,009	25,295	0.040
19	Austria	753	19,749	0.038
20	Thailand	64	2,060	0.031
21	Argentina	76	2,797	0.027
22	Singapore	564	20,886	0.027
23	Malaysia	95	3,905	0.024
24	Mexico	129	6,320	0.020
25	Indonesia	16	817	0.020

Source: US patents : www.uspto.gov
 GDP percapita : www.worldbank.org

Ebola, Zyka, STI and UHC

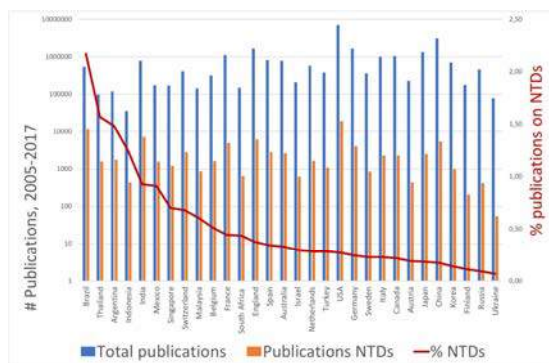


Fig 2. Distribution of countries according to % publications addressing NTDs. The red line spans from 0.07% (Ukraine) up to 2.17% (Brazil).

Ebola, Zyka, STI and UHC

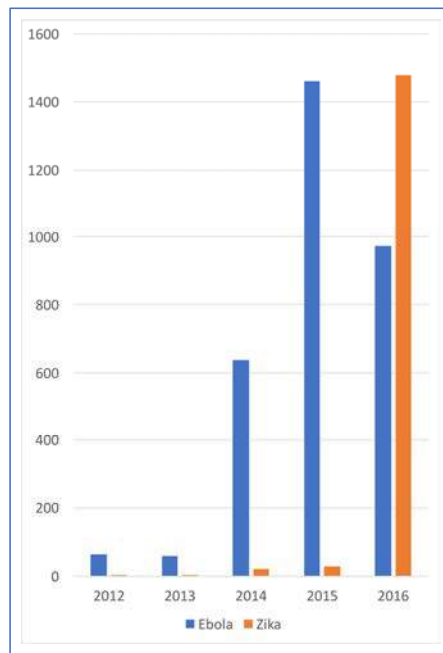


Fig 3. Evolution of publications on Ebola and Zika, 2012-2016. Publications on Ebola were already non-negligible before the epidemics and peaked in 2015 while the Zika virus was not really in the global radar screen of researchers or institutions before the epidemics spread in Brazil in 2015.

Ebola, Zyka, STI and UHC

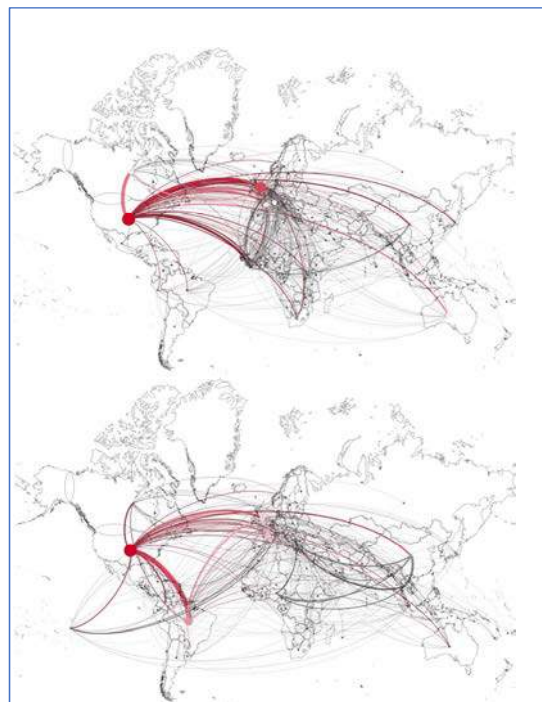


Fig 4. Coauthorship country networks addressing epidemics. Each node represents one country and two countries were considered connected if their authors shared the authorship of a paper. The thickness of links indicates the frequency of collaboration between two nodes. Bigger sizes and warmer colors indicate high betweenness centrality. Upper part: countries publishing on Ebola, 2015. Lower part: countries publishing on Zika, 2016.

Legal Framework

(Law 13243 of 2016)

- Published 08/02/2018, decree that regulates the Legal Framework of Science, Technology and Innovation
- Environment conducive to strategic partnerships between public STIs and
- Stimulating the participation of STIs in the innovation process
- Incentive to innovation in companies
- Stimulates attraction of R&D centers of foreign companies



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National Commission for SDGs



Brazilian Commission for SDGs Strategic Plan

- Launch of the Action Plan
- Mapping of the relationship between the Ministires public policies, the 2016-2019 PPA and SDGs targets to assess coherence and gaps
- Adaptation of global goals to the national reality;
- Definition of national SDGs indicators;
- Development of tools / platform for the dissemination of SDGs
- Processes and initiatives for the internalization / localization of Agenda 2030 throughout the national territory

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A New perspective on development

BASES FOR STRUCTURAL TRANSFORMATION

Key questions to guide the industrial and STI policies

1. What model of society we want?
2. How to build hegemony in the political arena to achieve it?
3. State Reform Agenda: from sectors and disciplines to local, national and global challenges



Fonte: Hidalgo, Linking Economic Complexity, Institutions and Income Inequality



The opportunity to build SDGs into national development plans and new business models

- Place road-maps under general frames of 2030 Agenda aspirational values; SDGs and TFM principles and narrative
- Relevance of integrating Global, National and subnational levels
- Aim is “leave no one behind”, which applies to people, populations and countries
- MIDC and MIIC: 2/3 of below level world population
- Sound diagnostic of innovation systems to confront with social inequities matrix and degree of social institutionalization
- To Revise International cooperation: from ODA to comprehensive support for sustainable development