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**A new paradigm for health in the 21st Century
Latin America
Challenges and barriers**

Jaime Breilh

2012



**University of British Columbia
Peter Wall Institute for
Advanced Studies**

***Peter Wall Lecture: “A new paradigm for
health in the 21st Century Latin America:
Challenges and barriers”***



**Jaime Breilh Md, MSc, PhD
(Dean of Health Sciences Area)
Universidad Andina Simón Bolívar
Sede Ecuador**

***Liu Institute for Global Issues
Vancouver, September 19th, 2012***



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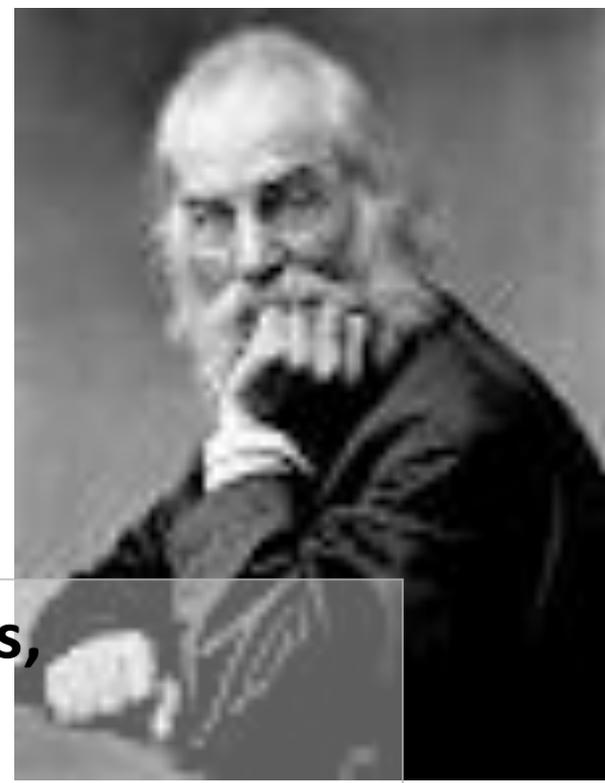
**Inspiring voices of
ill feeling and compassion
both from
the North and South**

**“...And in this time of coldness,
when Earth smells to human dust
and is so sad, I would like to knock
on all doors, beg to whomever for
pardon, and make him/her small
fresh bread loaves, in the oven of
my heart”**

- Cesar Vallejo

(Latin American poet, Poetic Antology)





**“Still here I carry my old delicious burdens,
I carry them, men and women,
I carry them with me wherever I go,
I swear it is impossible for me to get rid of them,
I am fill'd with them, and I will fill them in return....
You road I enter upon and look around,
I believe you are not all that is here,
I believe that much unseen is also here.”**

- Walt Whitman, “Song of the open road”



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Historical Lessons of Scientific Dissent



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A “recent” emblematic case of conflict of interests that affect scientific work: **cell phone, RF impacts on health**

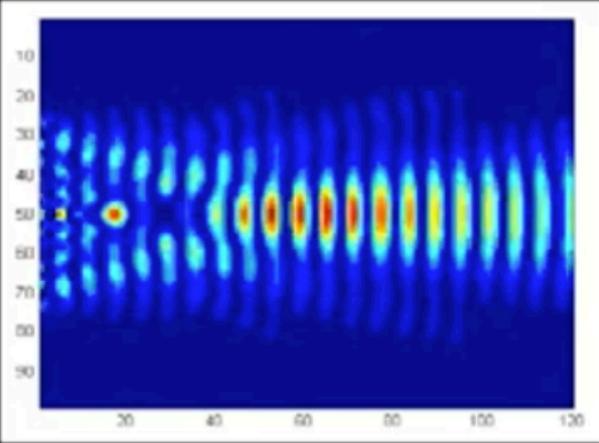
(Based on: D. Davis, Cellphone exposure toxicity and epidemiology: an update. National Institute of Environmental Sciences, April 4th, 2012)

Cell Phone Dangers | Dr. Devra Davis @ National Institute of Environmental Health Sciences (NIEHS)

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The impact of any form of radiation depends on the nature of the waves

- Frequency (pace)
- Amplitude (power)
- Pulse (beats)
- Intensity (power density)
- Polarity
- Information content



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Before After

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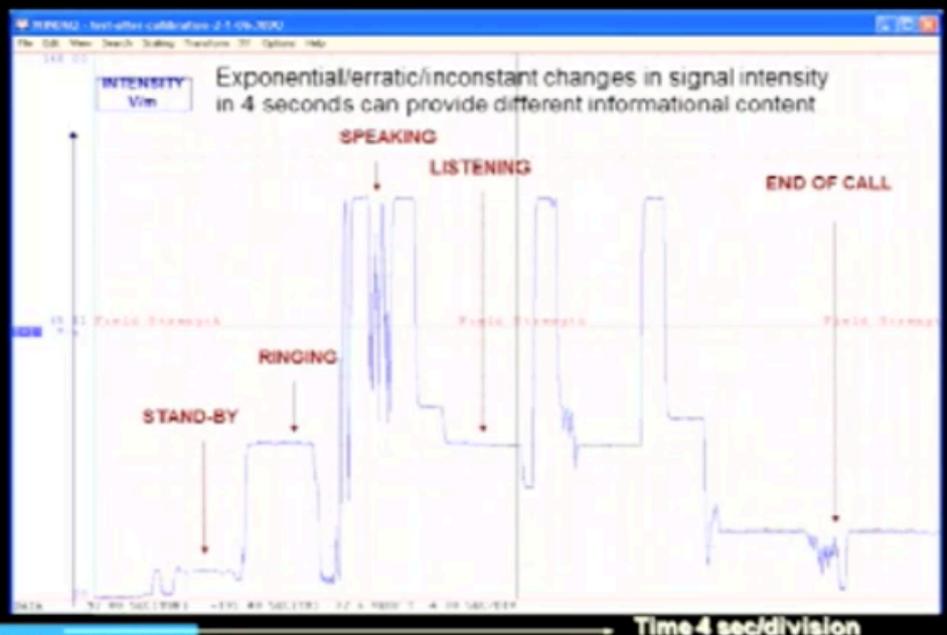

Павел Дуров: Выступление на
 de tsvolukhin

12:40 / 1:01:40

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Павел Дуров: Выступление на
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Cell Phone Radiation Penetrating Skull



ADULT Head



CHILD - 10 Years Old



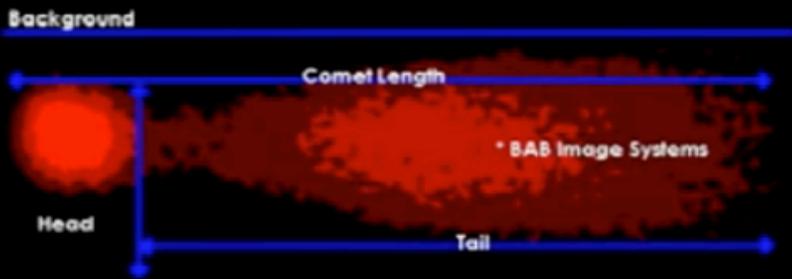
CHILD - 5 Years Old

Study by Gandi et al. University of Utah, 1996.

1. Children **absorb** more **energy** than adults from the same phone.
2. Tumors in **mid brain** are more deadly than those in **temporal lobe**.
3. Children's **cells** are **reproducing** more quickly than adults.
4. Children's **immune system** is not as well developed as adults.
5. Longer potential for **life-time exposure** for children than adults.

Cell Phone Dangers | Dr. Devra Davis @ National Institute of Environmental Health Sciences (NIEHS)

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- DNA is first unwound under alkaline conditions and then subjected to electrophoresis.
- DNA fragments migrate towards the anode, thereby forming a comet-like appearance.
- Amount of DNA damage is quantified by the length and density of the comet tail.

27:47 / 1:01:40

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RF Effects

- DNA Strand Breakage
- Chromosomal Abnormalities
- Cell Death
- Cellular Stress
- Neurological Degeneration
- Aging
- Free radical formation

28:25 / 1:01:40

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Huss, et al., Source of funding and results of studies of health effects of mobile phone use: systematic review of experimental studies, Environ. Health Perspect. 115 (2007) 1-4.

Cellphone Biological Studies							
		Effect Found		No Effect Found			
		Studies	% All Studies	Studies	% All Studies	Studies	% All Studies
Industry Funded	No.	27	8.3%	69	21.2%	96	29.4%
	%	28.1%		71.9%			
Independently Funded	No.	154	47.5%	76	23.5%	230	70.6%
	%	67.0%		33.0%			
Totals		181	55.5%	145	44.5%	326	100.0%

Chi² =39.8 (p=2.3x10⁻⁹)

11 July 2006 [4]

Table 1: Industry-Funded and Independently-Funded Cellphone Biological Studies



The Importance of a Critical Stance in Science

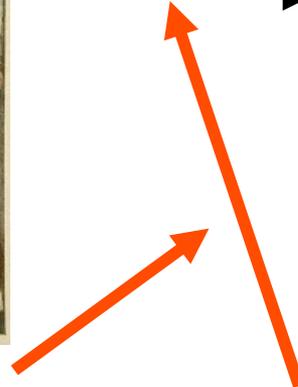
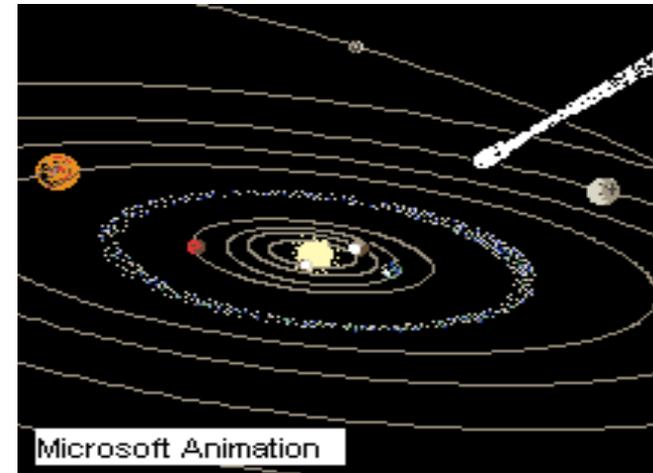
Basis of scientific revolutions is to be found in **innovating ideas** rather than in **instruments**.

Bernard Cohen, Revolution in Science, Harvard University Press, 1985

PTOLEMAIC Theory (Ptolemy)



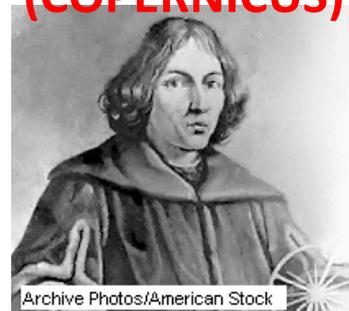
MODERN THEORY



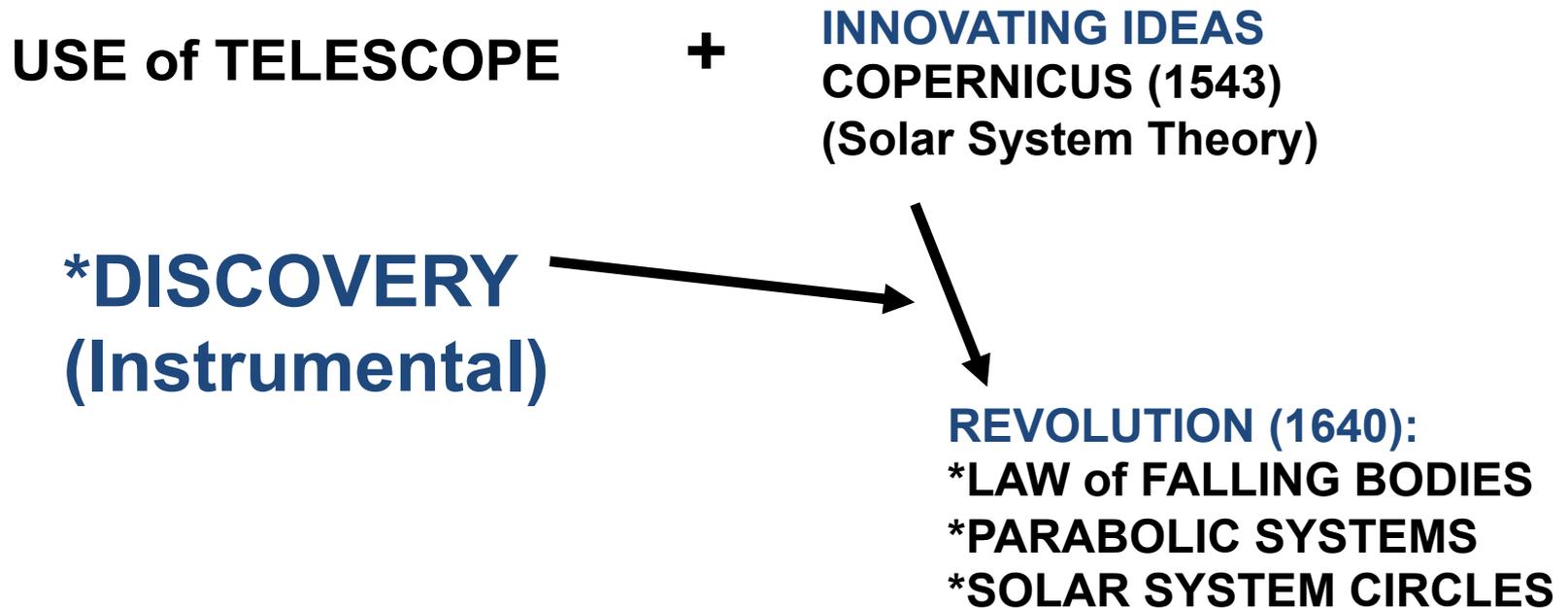
INSTRUMENT (TELESCOPE)



INNOVATING THEORY (COPERNICUS)



¿WHAT DETERMINED GALILEO'S PHILOSOPHICAL-SCIENTIFIC REVOLUTION?



"A wake-up call for all those who have accepted the poisons
of our age of plenty without a blink."—*Discover*

21st Century Paradox

THE
SECRET HISTORY
OF THE
WAR
ON
CANCER
DEVRA DAVIS

The potential of science as an instrument of life is undermined by the “misdirections of science” (and) “the maturing of the science of **doubt promotion** - the concerted and well funded effort to identify, magnify and exaggerate doubts about what we could say that we know as a way of delaying actions to change the way the World operates.”

(Devra Davis, The secret history of the war on Cancer. New York: Basic Books, 2009, p. xxi)

Author of *When Smoke Ran Like Water*
FINALIST FOR THE NATIONAL BOOK AWARD

OUR *PRACTICE*, OUR *OBSERVATION* and
OUR *CONCEPTS* ARE DISCIPLINED
THROUGH FORMS OF SIGNIFICANCE; THAT
IS, THROUGH *SCIENTIFIC PARADIGMS AND
THEIR ETHICAL IMPLICATIONS*
FROM WHICH WE DERIVE SENSE

Main lecture objective:

To analyze from a critical stance the present historical and social trends of Latin American development, profiling some of its human health and environmental consequences, in order to understand the importance and ethical imperative of the social determination of health paradigm (critical epidemiology), for the development of public health science and health rights.



**Rio Declaration on development
and environment:
An example of the fallacy of health/
environment technocratic
approaches**

(Río: June 3-14, 1992)

Rio Declaration on development and environment (June 3-14, 1992) -I -

1. **Human beings at the centre of sustainable** development.
2. The **sovereign right of States** to exploit their own resources, to ensure that activities within their jurisdiction or control do not cause damage
3. Right to development equitably meeting developmental and environmental needs of **present and future generations.**
4. **Environmental protection** shall constitute an **integral part** of the development process chain

Rio Declaration on development and environment (June 3-14, 1992) -II -

5. **Eradicate poverty** as requisite of sustainable development.
6. Priority to the situation and **special needs of developing countries**, particularly the more vulnerable.
7. States should cooperate under the **spirit of World solidarity** to conserve, protect, and reestablish the health and integrity of Earth's ecosystem.
8. **Reduce and eliminate non sustainable forms** of production and consumption and foment appropriate demographic policies
9. Increase **scientific knowledge** and technological transfer.

Rio Declaration on development and environment (June 3-14, 1992) -III -

10. **Participation of all concerned citizens**... all personas must have adequate access to public information on the environment especially materials and activities which endanger their communities.
11. States: **enact efficient laws** on environmental regulations...
12. Promotion of **favorable international economic system**...
13. Develop **national legislation related to responsibility and compensation** to victims of contamination and other environmental misdoings.

Rio Declaration on development and environment (June 3-14, 1992) -IV -

14. Discouraging or **avoiding the reallocation and transference** to other States of activities and substances that cause degradation....
15. Apply extensively the **precautionary principle**
16. Foment **the internalization of environmental costs**
- 17. Evaluate the environmental impact as national instrument**, of any proposed activity.
- 18. Notify immediately to other States** natural disasters or other situations
19. Notify activities with **transboundary environmental effects**
- 20. Women**, play a key role

Rio Declaration on development and environment (June 3-14, 1992) -V -

21. Mobilize the creativity, ideals and values of **youth...**
22. **Indigenous peoples** and their communities a fundamental role ..
23. Protect... the **peoples submitted** to oppression , domination and occupation.....
24. **War** is, by definition, an enemy of sustainable development
25. **Peace, development and environmental protection** are interdependent ...
26. **Solve peacefully** all environmental controversies.
27. **Cooperate in good faith and with an spirit of solidarity** in the application of the principles of this declaration

Critical assessment

- Applies a paradigm which is functional for big business interests.
- It assumes an anthropocentric perspective.
- It marginalizes gender and ethnicity
(unicultural, interpretative monism, Wallerstein)
- It presupposes an ineffective (cosmetic) logic.



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21st Century Global and Latin American Market Society: acceleration of profit and alienated consumerism (social determination of unhealthiness)



Metabolism between society and nature



- Economic **accumulation** through profit geared “productivism”.
- Social distribution of goods and services (commodities) according to **power matrix**: class, gender and ethnicity.
- Multiplication of **unhealthy** socio environmental spaces.



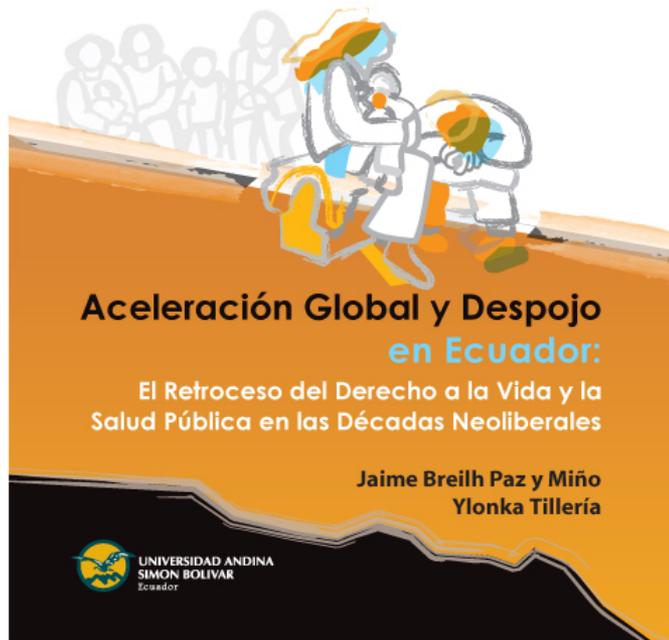
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**The “worth” of People and Things
is their *exchange value*
(including nature, life and health).**

**The Structural Roots
of the
Social Determination of
Unhealthiness**

Social Determination of Unhealthiness: Roots ***(wealth concentration, social exclusion and environmental degradation)***

- (1) Profit geared technological acceleration***
(Castells, 1996)
- (2) Dispossession***
(Harvey, 2003)
- (3) Shock***
(Klein, 2008)



**(1) Profit geared
technological
acceleration and
convergence**

Transnational corporations convergence of technology

(Basic platform of nanotechnology)

- Genetic modification and mapping
- Organism sequencing
- Electronic computation (nano-computation)
- → synthetic biology
(artificial or hybrid organisms)
- **B-A-N-G: bytes, atoms, neurons, genes**

Nanotechnology

Nanometric scale (1 nanometer = 1 / 1 million millimeter)

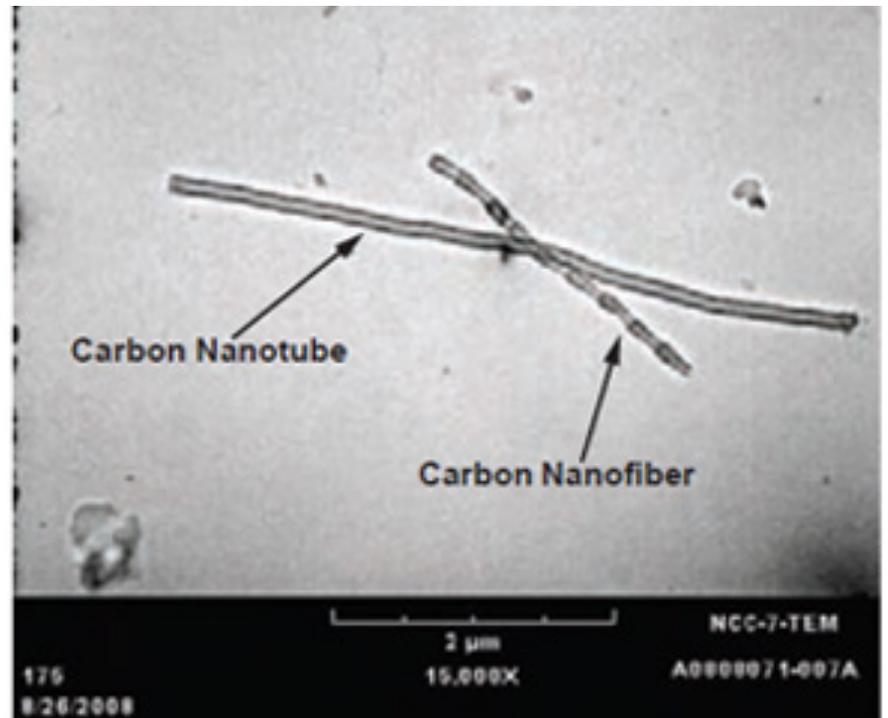
Unedited properties of physical, chemical and biological processes at nanometric scale of which much is unknown.

Their health and environmental consequences and toxicology little known.



Sumio Iijima (descubridor de los nanotubos de Carbono):
“nanotubos podrían servir para atacar tumores sin destruir células sanas –nanodosis-”.

Toxicity of nanoparticles is generally greater with tubular or fibrous nanoparticles



Not Only Toxicity

Transnational strategy for appropriation of life

TECHNOLOGICAL CONVERGENCE

Nanotechnology

Genomic and proteomic biotechnology

Informatics (digital control of GMOs)

Neurosciences (neurotransmitters)

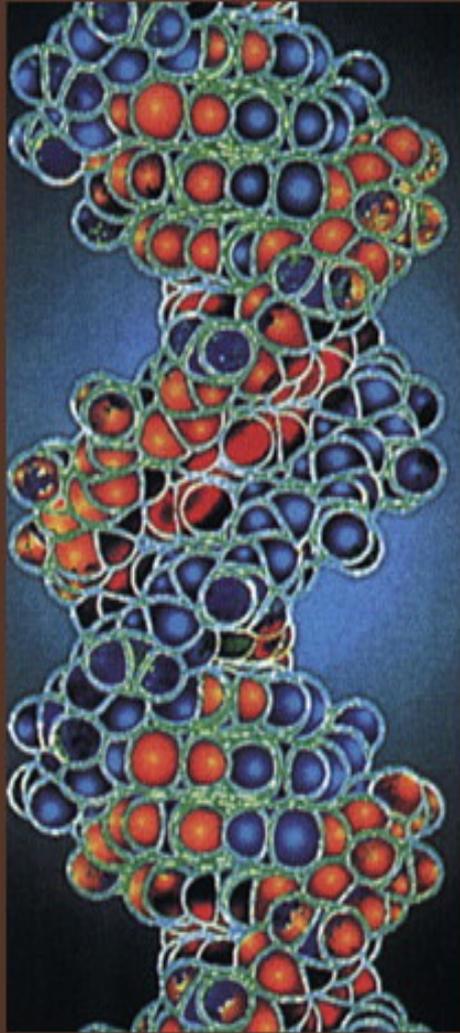


Monopoly, patterns and commodification of nature

- SEEDS
- CONTROL SYSTEMS
- TRANSFORMATION TO NON FOOD AGRICULTURE (Energy crops)
- UNCONTROLLED NON- PRECAUTIONARY TRANSFORMATION OF BIODIVERSITY

Sources: S. Ribeiro, 2004 / B. Rubio, 2009 / J. Breilh, 2011

Human and Biodiversity Impacts of Transgenic Components



Impactos de los transgénicos en el ser humanos, animales y biodiversidad

Ser Afectado	Transgénico	Impacto	Fuente
Ser Humano	Agrobacterium tumefaciens	Secuencia genética capaz de iniciar tumor	Kunik, Tsafira, Gafni, Dingwall and Citovsky. Genetic Transformation of HeLa cells by Agrobacterium. Proc.Natl.Acad Sci. USA, 98: 1871-1876, 2001
	Triptófano recombinante	Aminoácido L triptófano producido por bacterias transgénicas mata personas e incapacita a 1500	Human Resources Subcommittee House of Representatives. 1999
	Hormona transgénica de crecimiento bovino rBGH Somato.Tropina Bovina (Monsanto)	Incremento de nivel en leche de otra hormona llamada IGF-1 (factor de crecimiento insulínico tipo 1) se asocia con Cáncer de seno, próstata, y colon.	
Otros seres vivos	Cultivos transgénicos	Formación de alérgenos: Secuencia de aminoácidos idéntica a conocidos alérgenos	Kleter y Peijnenburg. Screening of transgenic proteins expressed in transgenic food crops for the presence of short amino acid sequences identical to potential IgE-binding linear epitopes of allergens. BMC Structural Biology, 2002
	Soya GM	Alteraciones de las células espermáticas de ratones alimentados con soya GM	Vechio et al. Ultrastructural analysis of testes from mice fed with genetically modified soybean. European Journal of Histochemistry, 48(4): 449-454, 2004
	Papa transgénica	Deformación de intestino delgado y células linfocíticas interepiteliales	Arpad Pustai. Rowett Institute
	Maiz transgénico CBH351 (Toxina Cry)	Impacto en sistema inmunológico de ratas	Teshima et al. Effect of subchronic feeding of genetically modified corn CBH351) on immune system in BN rats and B10A mice. 42: 273-9, 2002
	Maiz transgénico MON863	Toxicidad en hígado y riñones de ratas	Seralini et al. New analysis of a rat feeding study with a genetically modified corn reveals signs of hepatorenal toxicity, Archives of Environmental Contamination and Toxicology, 2007
	Hormona transgénica de crecimiento bovino rBGH Somato.Tropina Bovina (Monsanto)	Incremento de 16 enfermedades en bovinos, incluida mastitis y problemas de gestación (sufrimiento del animal) y leche contiene restos de antibióticos, pus y sangre	Michel Jansen. Asociación de Consumidores de Estados Unidos
	Tomate transgénico	Toxicidad en ratas con lesiones estomacales	
Biodiversidad	Semillas terminator, cultivos BT, maíz BT, Soya RR,	Organismos acuáticos, insectos benéficos, masa microbiana, pérdida de bosques, contaminación especies silvestres de grosella, contaminación por plantas adventicias,	



Agrofueels

Agrofuels: Advantages (*Supposed*)

- **Renewable (fossil fuels are not)**
- **Production is initially cheaper**
- **Production is more sustainable**
(más sustentable);
- **Less greenhouse gas emissions**

Agrofuels: Disadvantages

- **Enormous extensions displace food crops.**
- **Promote monopoly transnational model.**
- **Climatic change: albedo increase**
- **Increase costs of food (~40% in next decade), and only cover 1% of transport energy demand.**
- **Destroy biodiversity and enormous water consumption.**
- **Logic of big forestry mono-crop model with GM trees.**
- **Only sustainable at small scale in communities with agricultural waste.**

Brasil: Ethanol

*To produce 1 Litre of ethanol,
industry needs 30 liters of water.*



Palm oil ethanol gas emissions and climate warming

- Emissions of nitrous oxide through intensive use of fertilizers.
- Forest destruction, loss of biomass and biodiversity;
- Climate warming.

Big scale agricultural technology and food: An example

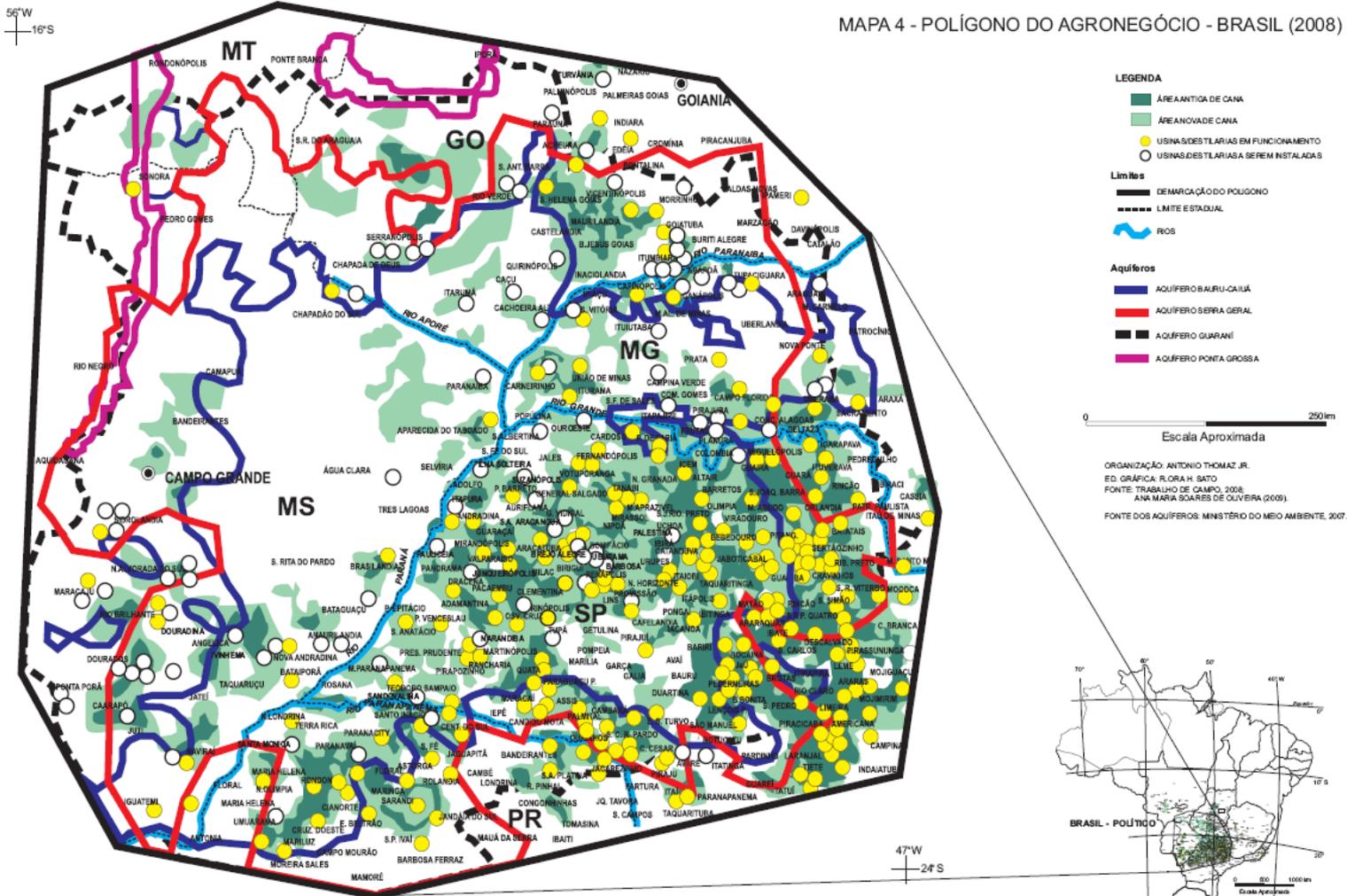
Dossiê ABRASCO

**Asociación Brasileña de Salud
Colectiva**

Comisión Ejecutiva

Rio de Janeiro, World Nutrition, 2012

Sao Paulo: biggest agribusiness polygon of the World

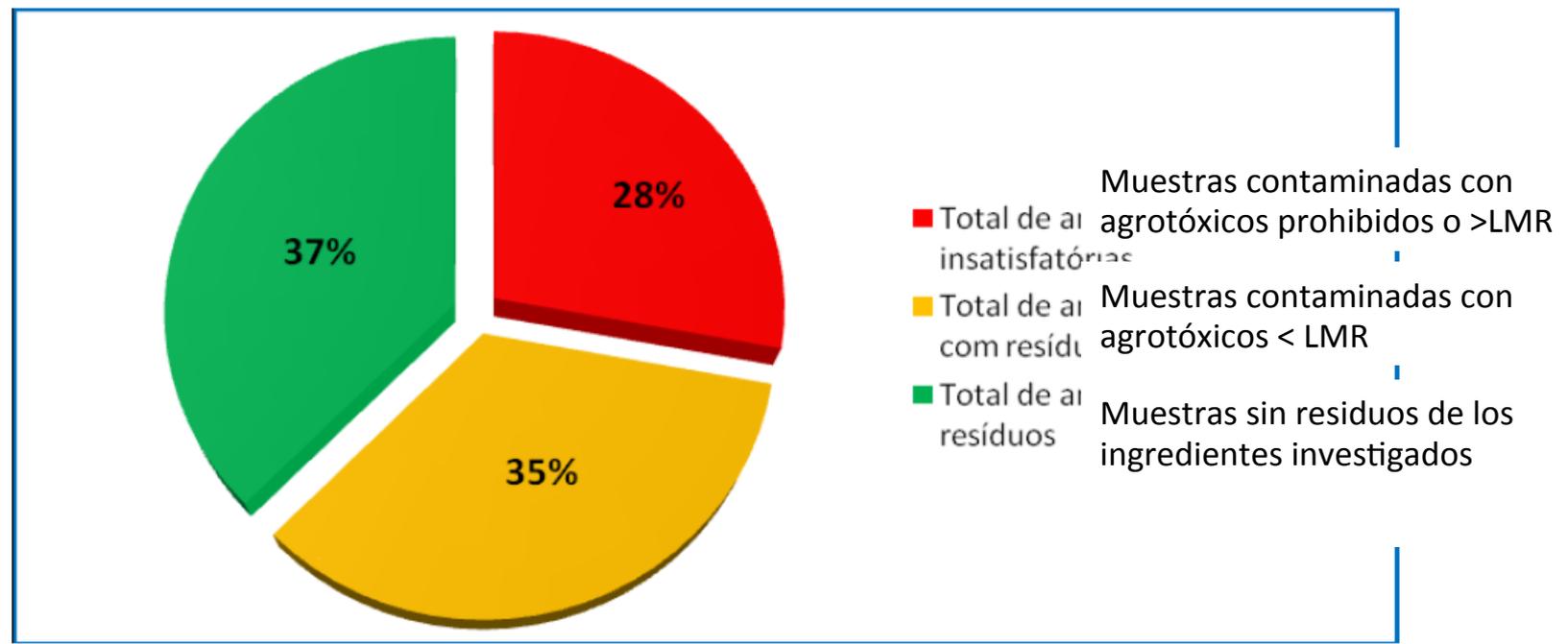


(Fuente: Maria De Moraes, Conferencia Foro Internacional Quito, 2008)



Massive poorly regulated application of agro toxic chemicals

Figura 03. Distribuição das amostras segundo a presença ou a ausência de resíduos de agrotóxicos. PARA, 2010. Brazil: Toxic chemical residuals in food



Fonte: ANVISA, 2011

Quadro 05: Número de amostras analisadas por cultura e resultados insatisfatórios. PARA, 2010. Percentage of contaminated samples

Produto	Nº de amostras Analisadas		NA > LMR		>LMR e NA		Total de Insatisfatórios		
	Nº	%	Nº	%	Nº	%	Nº	%	
Abacaxi	122	20	16,4%	10	8,2%	10	8,2%	40	32,8%
Alface	131	68	51,9%	0	0,0%	3	2,3%	71	54,2%
Arroz	148	11	7,4%	0	0,0%	0	0,0%	11	7,4%
Batata	145	0	0,0%	0	0,0%	0	0,0%	0	0,0%
Beterraba	144	44	30,6%	2	1,4%	1	0,7%	47	32,6%
Cebola	131	4	3,1%	0	0,0%	0	0,0%	4	3,1%
Cenoura	141	69	48,9%	0	0,0%	1	0,7%	70	49,6%
Couve	144	35	24,3%	4	2,8%	7	4,9%	46	31,9%
Feijão	153	8	5,2%	2	1,3%	0	0,0%	10	6,5%
Laranja	148	15	10,1%	3	2,0%	0	0,0%	18	12,2%
Maçã	146	8	5,5%	5	3,4%	0	0,0%	13	8,9%
Mamão	148	32	21,6%	10	6,8%	3	2,0%	45	30,4%
Manga	125	05	4,0%	0	0,0%	0	0,0%	5	4,0%
Morango	112	58	51,8%	3	2,7%	10	8,9%	71	63,4%
Pepino	136	76	55,9%	2	1,5%	0	0,0%	78	57,4%
Pimentão	146	124	84,9%	0	0,0%	10	6,8%	134	91,8%
Repolho	127	8	6,3%	0	0,0%	0	0,0%	08	6,3%
Tomate	141	20	14,2%	1	0,7%	2	1,4%	23	16,3%
Total	2488	605	24,3%	42	1,7%	47	1,9%	694	27,9%

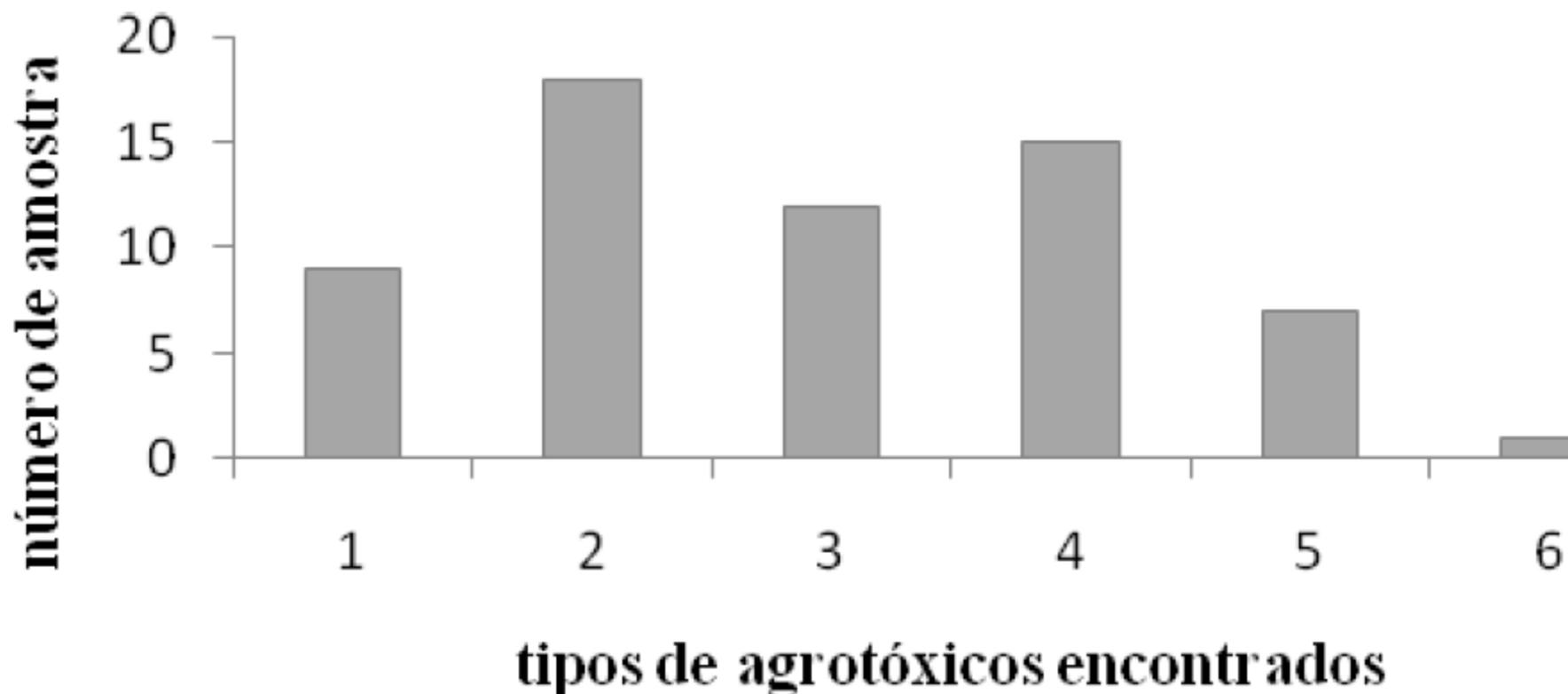
Quadro 07. Efeitos tóxicos dos ingredientes ativos de agrotóxicos banidos ou em reavaliação com as respectivas restrições ao uso no mundo.

Agrotóxicos	Problemas relacionados	Proibido ou restrito
Abamectina	Toxicidade aguda e suspeita de toxicidade reprodutiva do IA e de seus metabólitos	Comunidade Europeia - proibido
Acefato	Neurotoxicidade, suspeita de carcinogenicidade e de toxicidade reprodutiva e a necessidade de revisar a Ingestão Diária Aceitável.	Comunidade Europeia- proibido
Carbofurano	Alta toxicidade aguda, suspeita de desregulação endócrina	Comunidade Europeia, Estados Unidos- proibido
Cihexatina	Alta toxicidade aguda, suspeita de carcinogenicidade para seres humanos, toxicidade reprodutiva e neurotoxicidade	Comunidade Europeia, Japão, Estados Unidos, Canadá- proibido . Uso exclusivo para citrus no Brasil , 2010
Endossulfam	Alta toxicidade aguda, suspeita de desregulação endócrina e toxicidade reprodutiva.	Comunidade Europeia- proibido , Índia (autorizada só a produção) A ser proibido no Brasil a partir julho de 2013
Forato	Alta toxicidade aguda e neurotoxicidade	Comunidade Europeia, Estados Unidos- proibido

Figura 4. Municípios que relataram poluição por agrotóxicos em água, Brasil, 2011. (Municipalities facing water sources contamination with agrototoxic residues, Brazil, 2011.)



Figura 5. Tipos de agrotóxicos detectados em amostras de leite materno em Lucas do Rio Verde-MT, em 2010.



Fonte: PALMA, 2011

Presence of pesticides in breast milk

Global food market monopoly

Food chain monopoly (control 50-90% of food sales)



- **406 billion USD**

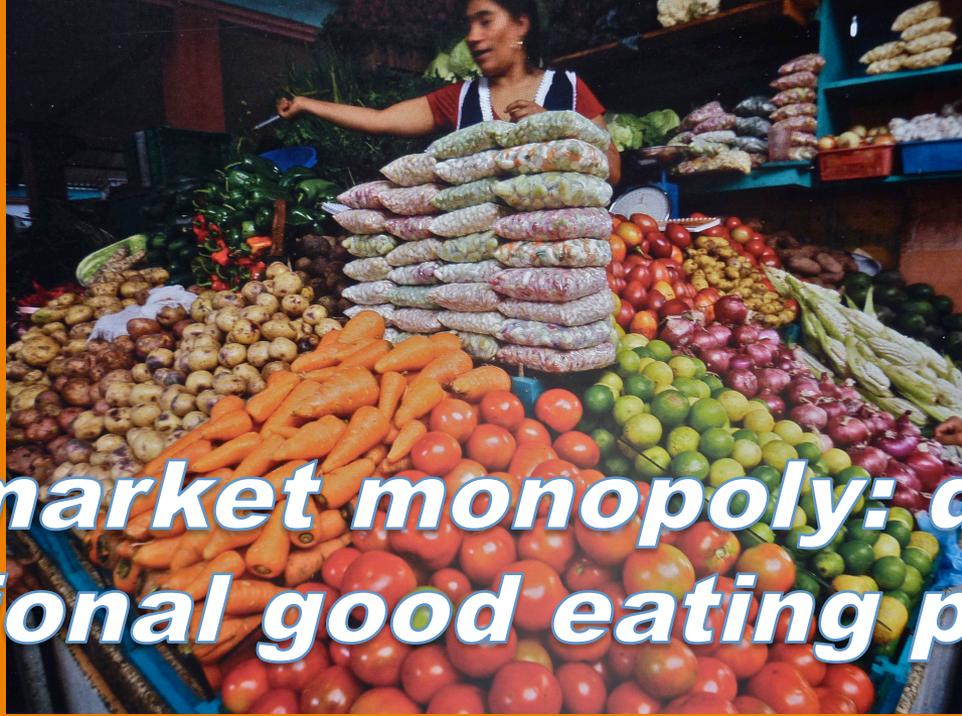


- **129 billion USD**



- **1.15 billion USD**
(Ecuador)

Food market monopoly: destroys traditional good eating patterns



***What is the meaning and
viability of a food security
program under those
circumstances?***



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The case of dengue: linear interpretation (*virus, mosquitoes, breeding and spraying*) versus social determination





**Focusing on breeding sites
and mosquitoes**



Dengue: Linear model (Positivist paradigm) (CIE-10 A90)

x1= virus (Arbovirus DEN1,DEN2,DEN3,DEN4 / group Flavivirus)

x2= vector (Aedes aegypti / Aedes albopictus)

x3= transmission mechanisms

x4= health care

x5= sanitary infrastructure

x6= behaviours

x7= habits (hygiene)

x8= nutrition

y= cases

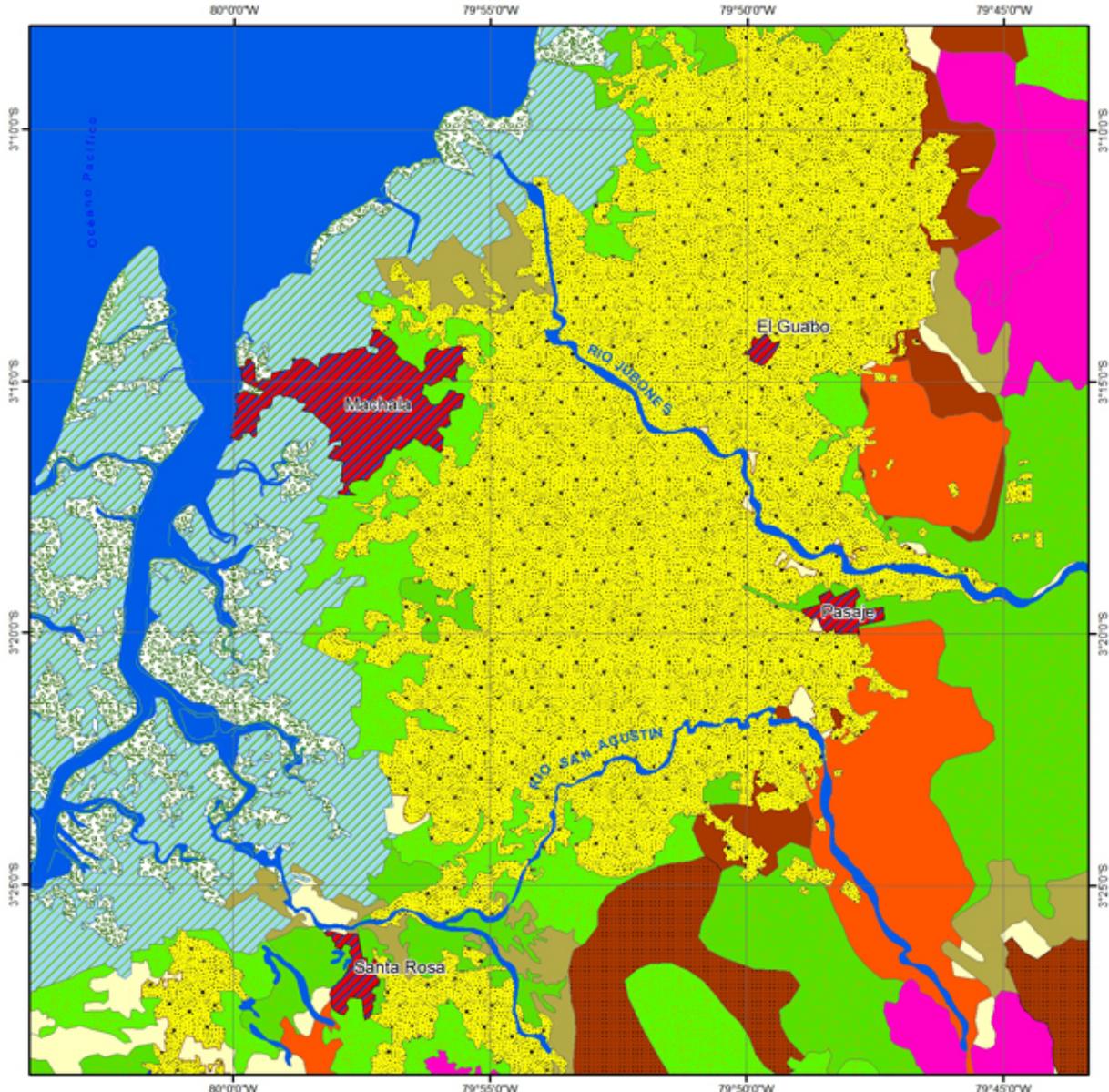
Socially determined processes:

- 1. Transmission**
- 2. Public policies and management**
- 3. Collective capacity for coping**

Social determination of transmission:

- * Infective sources;**
- * Human exposure patterns;**
- * Trends of vulnerability**

EXPANSION OF AGRINDUSTRIAL BANANA, SHRIMP AND PASTURES



Legenda

Cobertura Vegetal Natural	Uso del Suelo
BOSQUE NATURAL	BANANO
MANGLAR	CACAO
VEGETACION ARBUSTIVA	CAFE
Otros	CULTIVOS CICLO CORTO
AGUA	PASTO CULTIVADO
ZONA URBANA	CAMARONERAS

UBICACION A NIVEL TERRITORIAL



Sistema de Referencia WGS 84, Coordenadas Geográficas

PROYECTO: DESARROLLO DEL CONTROL Y PREVENCIÓN DEL DENGUE EN LA CIUDAD DE MACHALA

El mapa de Cobertura Vegetal y Uso del Suelo muestra la gran extensión de plantaciones bananeras en los alrededores de la ciudad de Machala. Los agroquímicos matan los depredadores de los mosquitos. La deforestación liquida los refugios de predadores y contribuye al calentamiento lo cual acorta el ciclo vital del mosquito y acelera la tasa de transmisión.

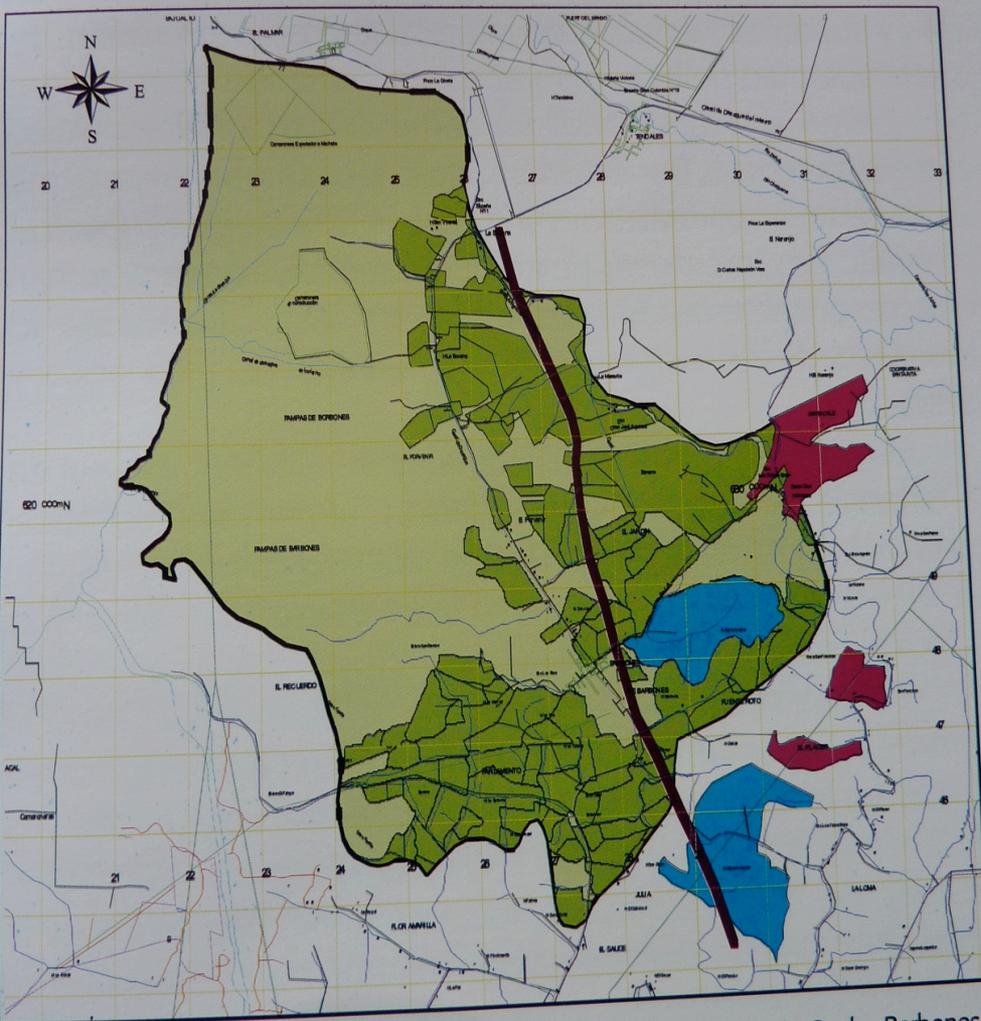
Fuente: MAPA REALIZADO POR EL PROYECTO MAG-IICA-CLIRSEN AÑO 2002		
Fecha: Julio 2012	Escala de Trabajo: 1:250 000	Escala de Impresión: 1:150 000



Land Grabbing

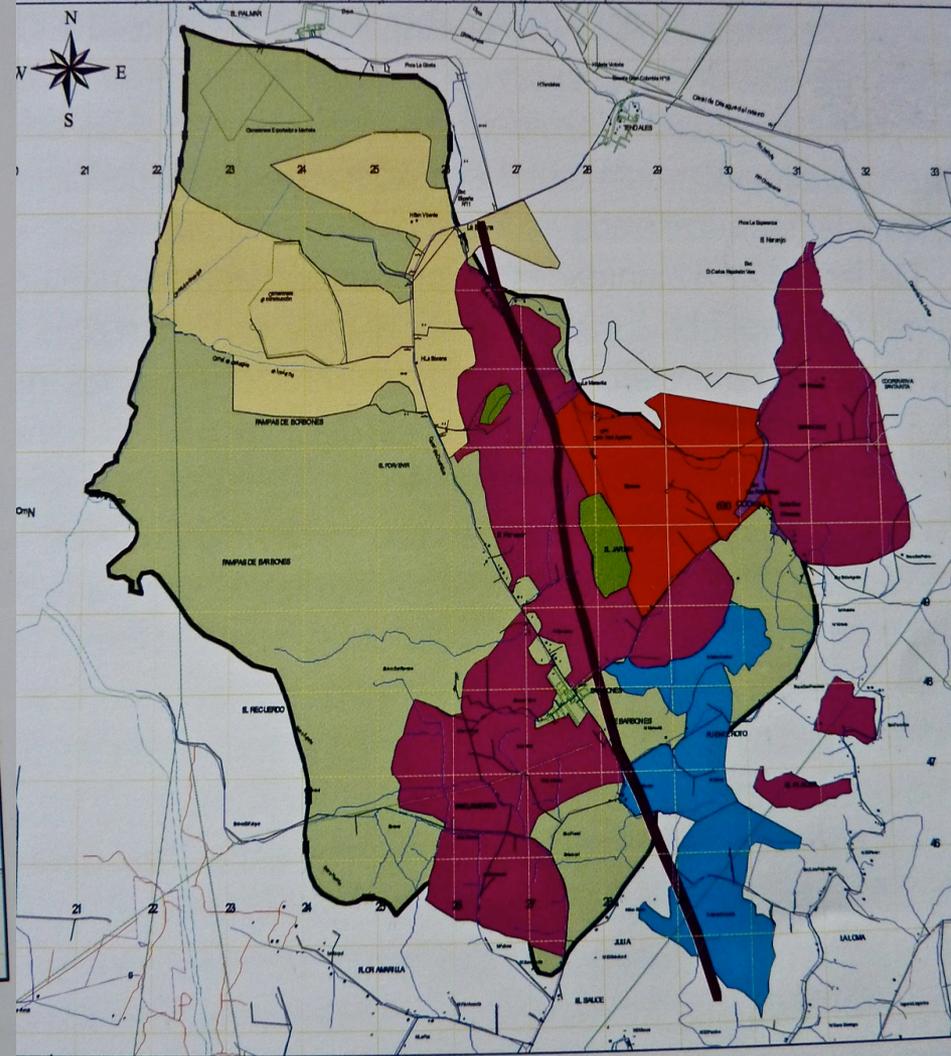
(El Guabo, El Oro – 1994 - 2007) Fuente: SIPAE, Atlas, 2011

Mapa N.º 13: Extensiones de plantaciones y fincas bananeras en Barbones, 1994



- Superficie cultivada de banano de los productores bananeros de la parroquia Barbones en 1994
- Canal de riego Pasaje-Guabo-Barbones
- Propiedades del señor Euclides Palacios
- Prop. Boanerges Pereira
- Pueblo del Barbones

Mapa N.º 14: Extensiones de plantaciones y fincas bananeras en Barbones, 2007



- Propiedades del señor Euclides Palacios
- Prop. Boanerges Pereira
- Propiedad del señor Hugo Borja
- Propiedad de medianos productores y camaroneras



***Chemical, plastic
contamination and warming
(albedo)***





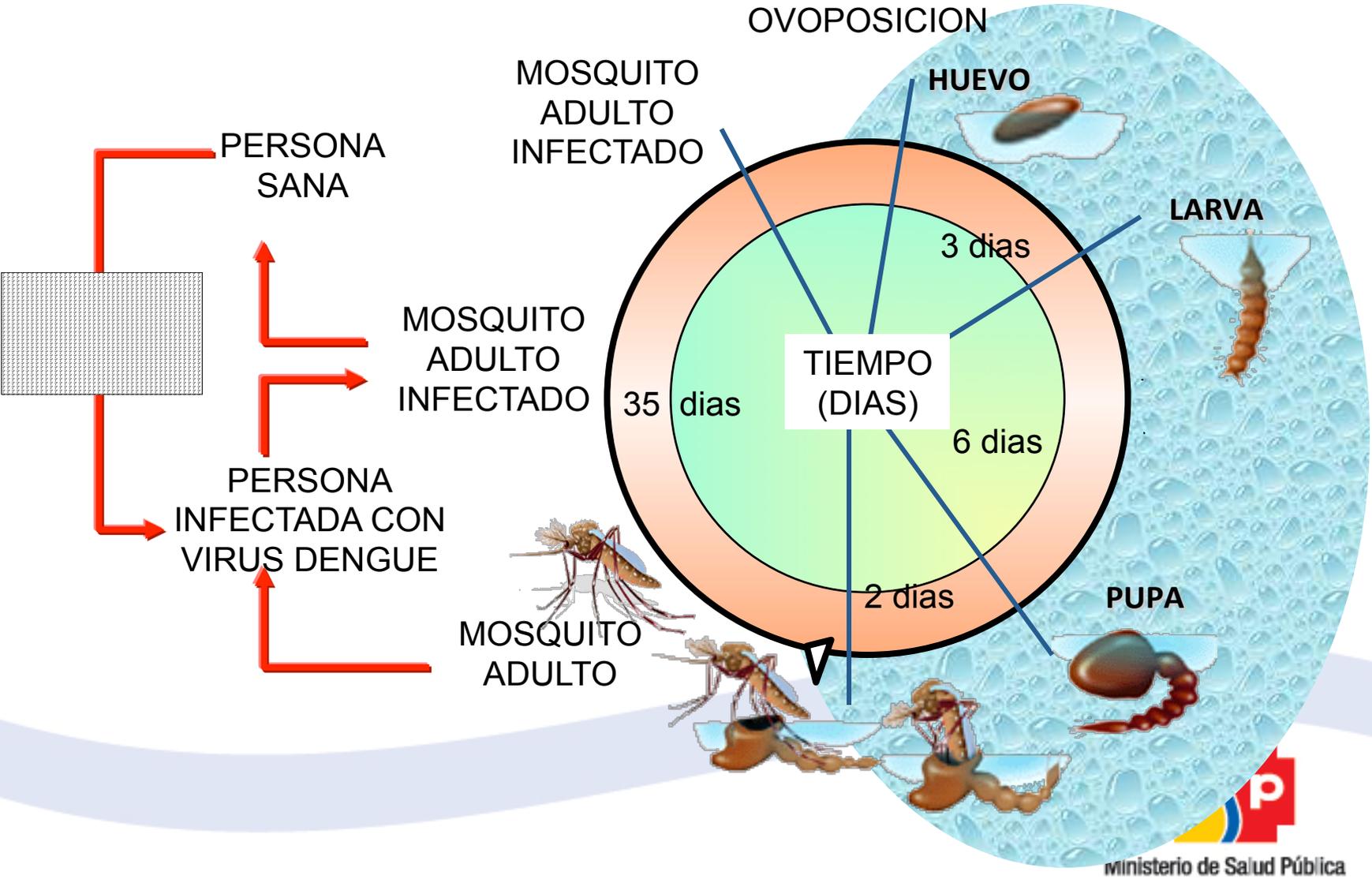
Before:

Agro-ecological processes,
Biodiversity (polycrops),
No chemicals, No plastic)



*Now: transnational monopoly,
single crop, biomass loss,
water drainage, warming*

Shortening mosquito's life cycle and viral replication times



Fruit agribusiness, neoliberal urban growth and the entomological, environmental conditions of dengue transmission

- **Banana production → agrotoxins → kill fish, amphibians (frogs) and other mosquito predators (larvae and adults)**
- **Agro Industry → forest destruction → liquidates mosquito predator habitat**
- **Agribusiness → destroys biodiversity and biomass → contributes to warming → shortens mosquito's life cycle and viral replication time → accelerates rate of transmission**
- **Urban inequity and degradation → infective source development → multiplication of household breeding sites**
- **Urban living modes of the poor → multiplication of contact patterns and susceptible cases**

Paired Intervention and Control Design (*Machala*)

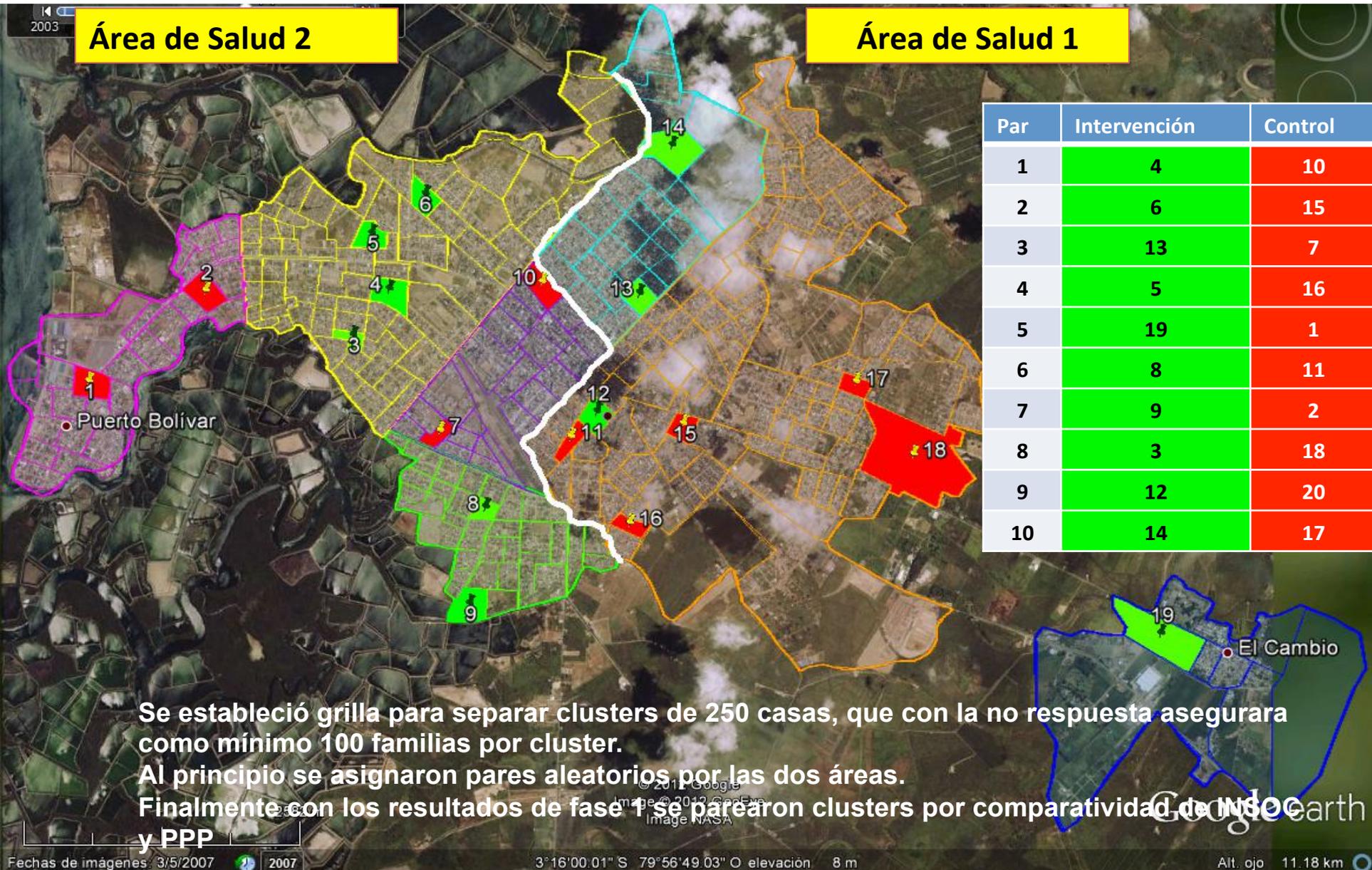
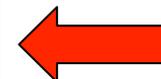
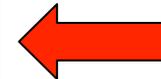
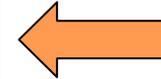


Table 1.8 Perceptions of dengue by stratified clusters

Social Determination Index	Cluster No.	% of participants who have had dengue	% of Participants who are familiar with dengue	% of participants who believe dengue is a serious problem	% of participants who understand the dengue transmission cycle	% of participants who know of or have participated in a community-based control or clean-up effort
High or Low	Machala	11.9	99.7	81.4	88.5	22.1
	ALL	29.2	99.7			
	HIGHER	26.1	99.7	79.2		
Low-Middle	10	18.0	100	78	86	19
Upper-Middle	4	32.6	98	88	88	24
Upper-Middle	6	22.2	99	84	92	18
Low-Middle	15	25.0	100	85	93	29
Low-Middle	13	28.1	99	75	84	24
Low-Middle	7	31.7	100	76	84	19
	MEDIUM	29.1	98.7	83.9		
Upper-Middle	5	25.7	97	86	90	16
Low	16	31.5	100	79	84	38
Upper-Middle	19	42.6	100	85	82	23
Low-Middle	1	22.8	98	77	86	17
Low-Middle	11	25.9	99	79	90	18
Upper-Middle	8	27.4	97	85	78	18
	LOWER	31.9	99.7	81.2		
Low-Middle	2	23.3	99	79	86	13
Low	9	28.8	100	81	88	21
Low-Middle	18	34.7	99	79	82	15
Low-Middle	3	33.3	99	89	93	17
Low-Middle	12	34.2	98	75	85	23
Low-Middle	20	35.9	100	92	84	53
Low	14	27.1	100	86	86	13
Low-Middle	17	38.2	100	83	89	24

Tabla 2.9 Asociaciones de cluster estratificados con índice PPP, Machala 2011

Perceived Social Strata	Índice Insección Social	No. Cluster	Índice PPP (Iluviosa)
TOTAL	16.2		1.28
ALTO	27.7		.080
MAS ALTO			
Bajo-medio	26.2	10	1.34
Alto-medio	32.6	4	1.19
Alto-medio	17.8	6	1.10
Bajo-medio	19.2	15	0.68
Bajo-medio	21.1	13	0.60
Bajo-medio	46.7	7	0.04
MEDIO	15.5		1.66
Alto-medio	14.3	5	2.74
Bajo	16.7	16	2.12
Alto-medio	14.9	19	1.45
Bajo-medio	15.8	1	1.30
Bajo-medio	14.8	11	1.17
Alto-medio	16.1	8	0.99
BAJO	7.3		1.63
Bajo-medio	4.7	2	2.56
Bajo	5.8	9	2.43
Bajo-medio	10.2	18	2.31
Bajo-medio	10.4	3	2.16
Bajo-medio	10.5	12	1.40
Bajo-medio	5.1	20	1.07
Bajo	6.8	14	0.72
Bajo-medio	5.5	17	0.58



NOTA: ANOVA $p < .001$

Chi-cuadrado Pearson $p < .001$ entre cluster más puentes frente a los otros dos estratos (medio y bajo) strata

Table 1.10 Stratified clusters and associations with Container prevalence and Housing Quality Index

Perceived Social Strata	Social Insertion Index	Cluster No.	PPP Index * (rainy season)	Housing Quality index *	Most productive container for Aedes (rainy season)			Most ubiquitous container		
					1 st	2 nd	3 rd	1 st	2 nd	3 rd
ALL	16.2		1.38	2.48	Ground Tank	Cubeta	Bote	Cubeta	Bote	Bote (derelict)
HIGHER	27.7		0.80*	2.69 *	BOTE (583, 28%)			BOTE (1058, 30%)		
Low-Middle	26.2	10	1.34	2.78	Bote	Ground Tank	Cubeta	Bote	Cubeta	High Tank
Upper-Middle	32.6	4	1.19	2.86	Bote	Tires	Bote (derelict)	Bote	Cubeta	Bote (derelict)
Upper-Middle	17.8	6	1.10	2.56	Cubeta	Ground Tank	Bote	Cubeta	Bote	Ground Tank
Low-Middle	19.2	15	0.68	2.62	Bote	Ground Tank	Bote (derelict)	Bote	Cubeta	Cistern
Low-Middle	21.1	13	0.60	2.60	Bote	Ground Tank	Cubeta	Bote	Cubeta	High Tank
Low-Middle	46.7	7	0.04	2.72	Bote	Ground Tank	Cubeta	Bote	Cubeta	Cistern
MEDIUM	15.5		1.66	2.40	CUBETA (805, 31%)			CUBETA (1233, 35%)		
Upper-Middle	14.3	5	3.74	2.29	Cubeta	Vases/Houseplants	Misc. derelict	Cubeta	Bote	Bote (derelict)
Low	16.7	16	2.12	2.42	Ground Tank	Bote	Cubeta	Cubeta	Bote	Ground Tank
Upper-Middle	14.9	19	1.45	2.09	Ground Tank	Bote (derelict)	Tires	Cubeta	Bote	Ground Tank
Low-Middle	15.8	1	1.30	2.63	Cubeta	Ground Tank	Bote	Cubeta	Bote	Ground Tank
Low-Middle	14.8	11	1.17	2.54	Bote	Cubeta	Ground Tank	Cubeta	Bote	Bote (derelict)
Upper-Middle	16.1	8	0.99	2.39	Cubeta	Ground Tank	Bote (derelict)	Cubeta	Bote	Ground Tank
LOWER	7.3		1.63	2.39	GROUND TANK (966, 30%)			CUBETA		
Low-Middle	4.7	2	2.56	2.67	Bote	Ground Tank	Tires	Cubeta	Bote	High Tank
Low	5.8	9	2.43	2.10	Ground Tank	Bote	Cubeta	Cubeta	Bote	Bote (derelict)
Low-Middle	10.2	18	2.31	2.43	Ground Tank	Cubeta	Bote	Cubeta	Bote	Ground Tank
Low-Middle	10.4	3	2.16	2.47	Bote	Cubeta	Tires	Cubeta	Bote	Ground Tank
Low-Middle	10.5	12	1.40	2.72	Cubeta	Bote	Bote (derelict)	Cubeta	Bote	Bote (derelict)
Low-Middle	5.1	20	1.07	2.00	Tires	Bote (derelict)	Bote	Bote	Bote (derelict)	Cubeta
Low	6.8	14	0.72	2.36	Ground Tank	Tires	Garbage	Cubeta	Bote	Ground Tank
Low-Middle	5.5	17	0.58	2.45	Ground Tank	Cubeta	Misc. derelict	Cubeta	Bote	Ground Tank

NOTE: Pearson chi-square $p < .001$ between Higher and Other (Medium and Lower) strata



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**Under those circumstances,
conventional control measures based
on insecticide and breeding sites
become futile**



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(2) Disposesion

April 2012

Transnational Land Deals for Agriculture in the Global South

Analytical Report based on the Land Matrix Database

Ward Anseeuw, Mathieu Boche, Thomas Breu, Markus Giger, Jann Lay, Peter Messerli and Kerstin Nol

(LAND GRABBING)



Land grabbing

Transnational corporations have purchased millions of hectares of the best productive land:

***50 million hectares in Africa;**

***30 million in South East Asia;**

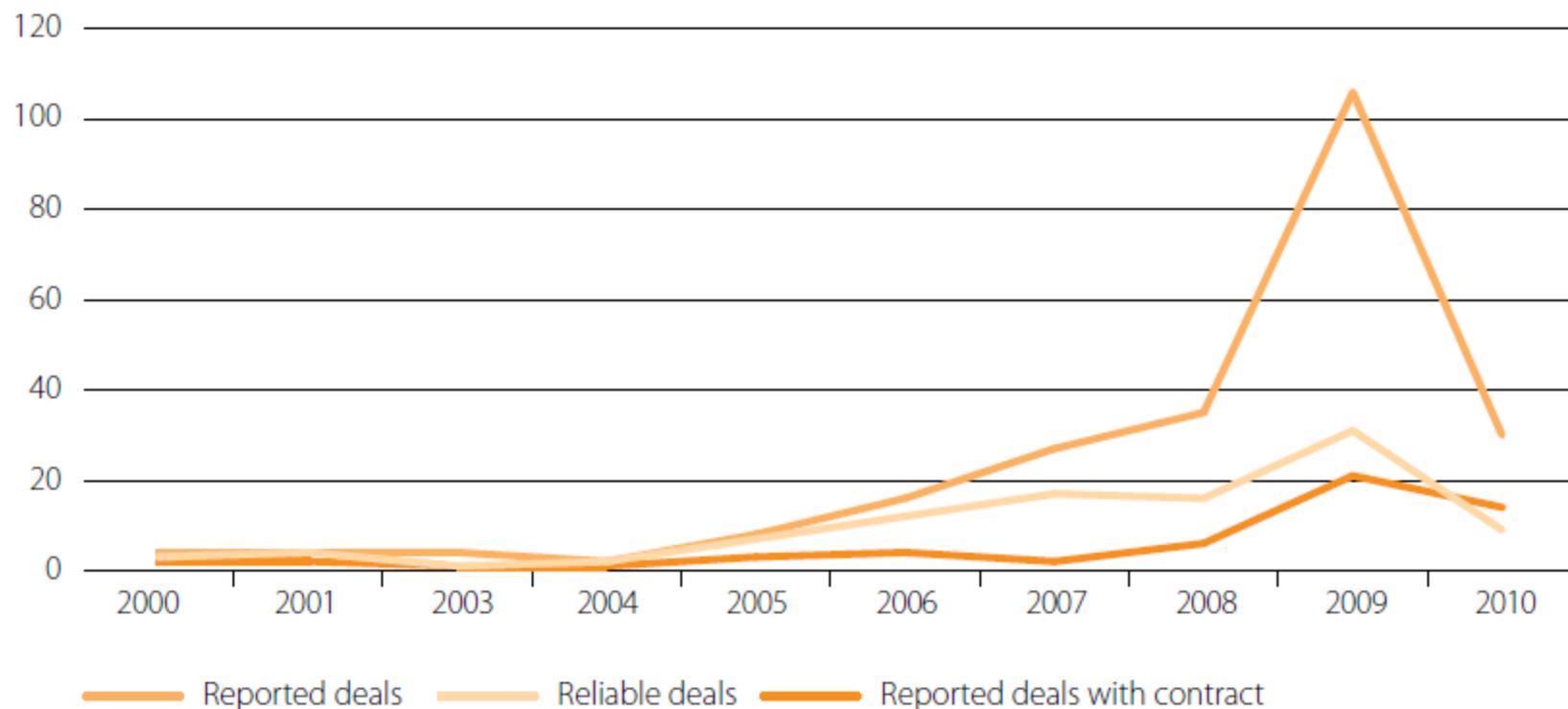
***7 million in South America, and**

***3 million in East European countries**

- Anseeuw W, Boche M, Breu T, Giger M, Lay J, Messerli P and Nolte k. Transnational land deals for agriculture in the Global South (Analytical report based on the Landmatrix database). April 2012.



Figure 1: Reported acquisitions for agriculture between 2000 and 2010



Source: Authors' calculations based on the Land Matrix.

Note: $N = 245$ for reported data & $N = 102$ for reliable data.

Figure 3: Land acquisitions by sub-region in Africa, number of projects and size

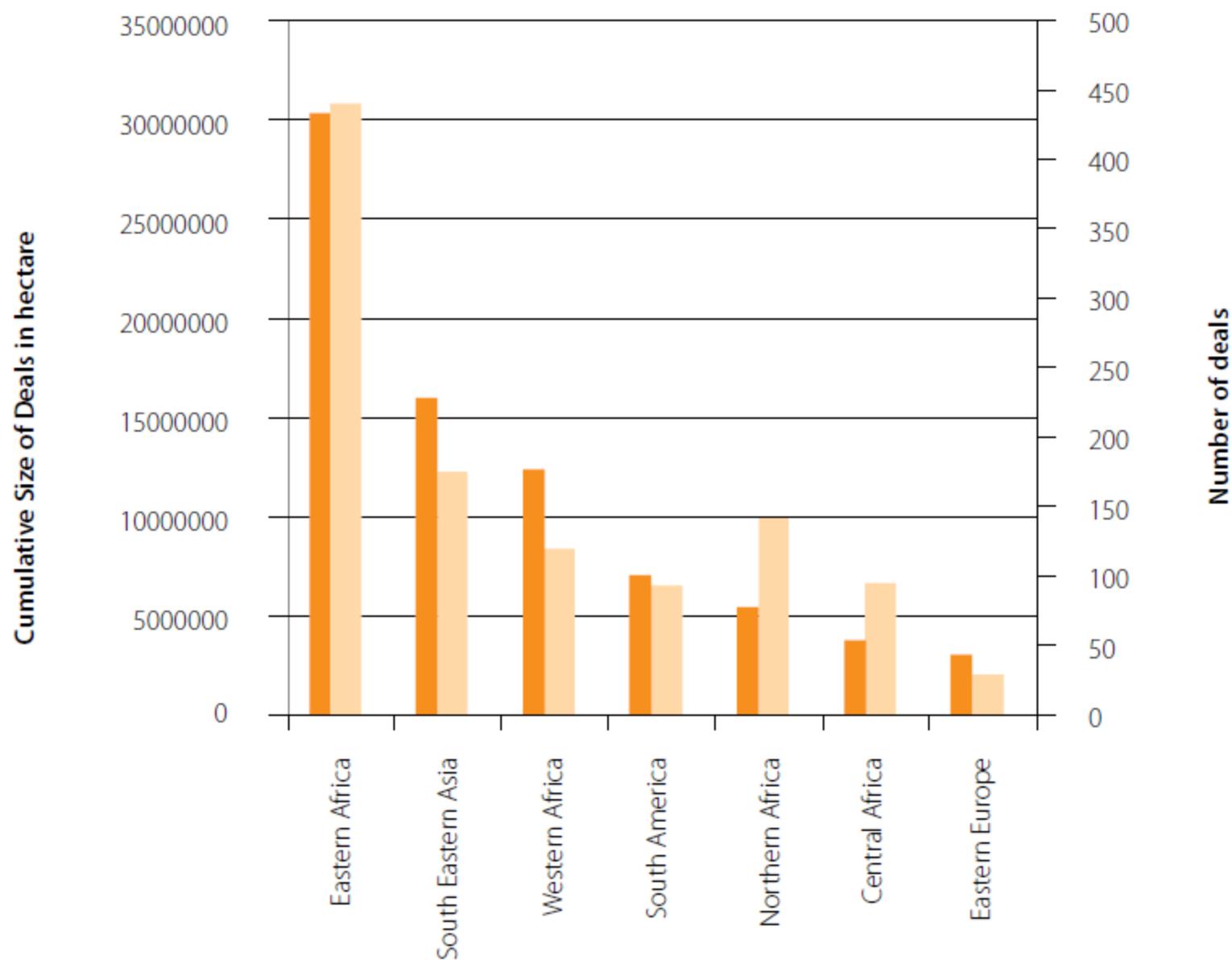
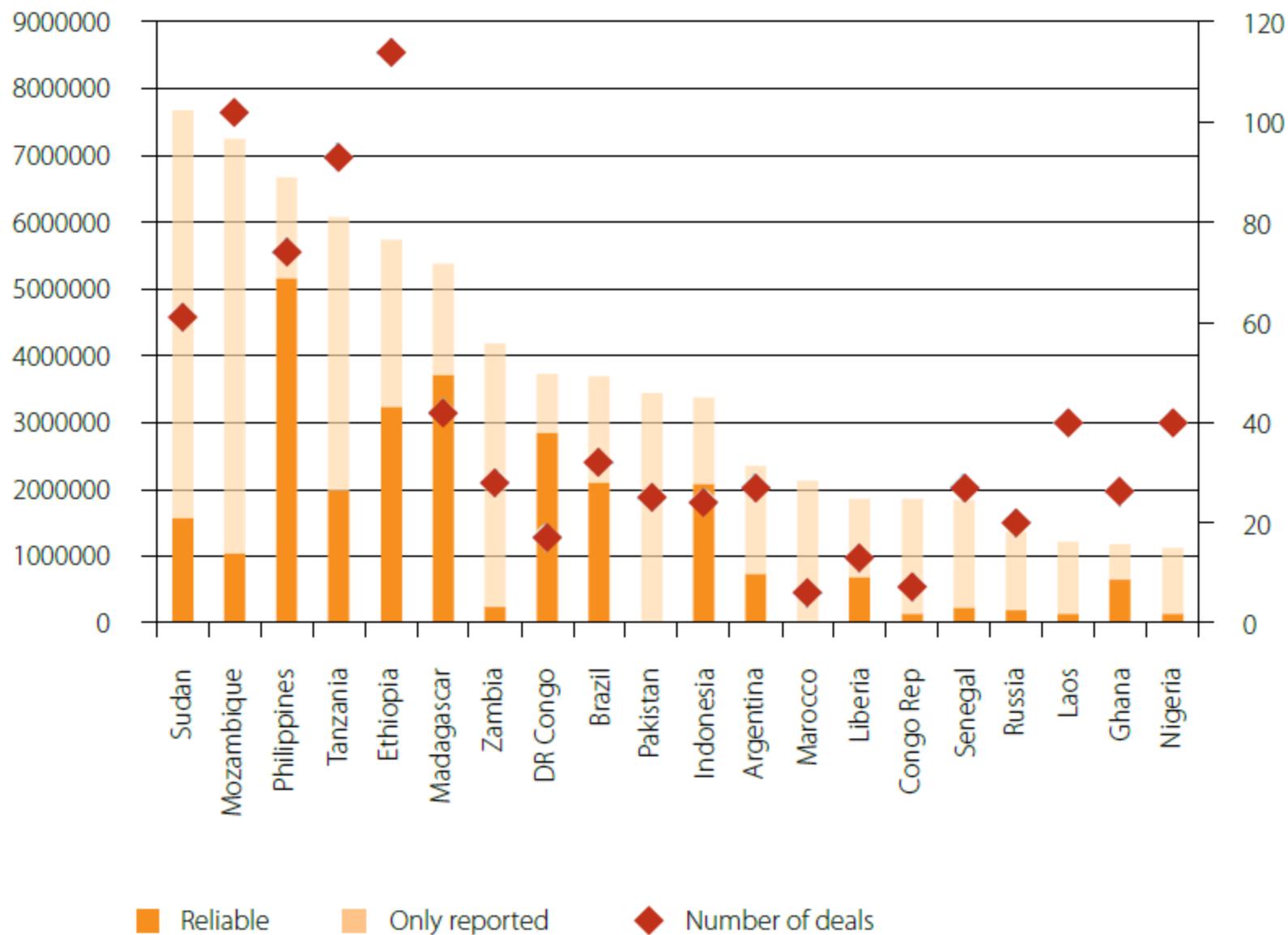




Figure 4: Most targeted countries according to size of total reported acquisitions



**What is the then the real
possibility of food
sovereignty?**



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(3) Accumulation by “shock” economy

MUNDO

{PUNTO DE ENLACE} <http://www.who.int/es/> El portal en español de la Organización Mundial de la Salud incluye un link sobre el brote de la gripe porcina en México y sobre alertas de epidemias. El sitio web trae estadísticas y datos sobre virus y epidemias presentes en distintas regiones del planeta. También incluye información sobre sus proyectos, así como datos, estadísticas y publicaciones sobre enfermedades y vacunas. También anexa un informe sobre la salud mundial.

NICHOS



Un vistazo al barrio de la luz roja en Ámsterdam

Conocido internacionalmente como 'Redlight District', De Wallen es el área de prostitución legalizada en Ámsterdam, Holanda. Usted camina por una avenida principal, junto al río, y se puede internar por calles y callejones, sin mayor peligro.

Allí hay cientos de cuartos con enormes ventanas que dan a la calle. Es de noche y todas las habitaciones están iluminadas con luz roja. Tras estas 'vitriñas', usted ve hermosas trabajadoras sexuales, ofreciendo sus servicios a los transeúntes. Las chicas suelen vestir ropa interior, aunque unas pocas muestran sus pechos desnudos. Si usted es como la mitad de los turistas que transitan por ahí, llegará por curiosidad o un mínimo de morbo.

Solamente el paseo ya ocupa el tiempo y no tiene nada de aburrido. Con todo, hay otros servicios para los más arriesgados. En el área también se encuentran 'sex shops' (tiendas de objetos sexuales), teatros con sexo en vivo y hasta dos museos: el Erótico y el de la Marihuana. Hablando de dicha droga, esta se expende en todas sus formas en las cafeterías del barrio, a más de los productos propios de tales negocios. **Edwin Hidalgo, EL COMERCIO**

Transnational mediatic construction of panic

Pánico por la gripe porcina

MÉXICO

Las autoridades suspendieron 553 eventos públicos y pidieron a la población evitar aglomeraciones durante 10 días. Las reacciones son a escala mundial.

Ciudad de México. AP y AFP mundo@elcomercio.com

Las escuelas y los museos están cerrados. Los partidos de fútbol que iban a jugarse a estadio lleno se disputarán en estadios vacíos. Los empleados sanitarios hacen bajar de subterráneos y autobuses a los pasajeros enfermos. En bares y clubes nocturnos algunos adolescentes bailan pero con mascarillas en sus rostros.



{ Breves }

Pakistán

12 niños mueren por explosión de bomba
Por lo menos 12 niños murieron ayer en un pueblo del noreste de Pakistán, al estallar una bomba que encontraron frente a la puerta de su escuela. Informaron fuentes oficiales. Una fuente policial señaló que los niños que fallecieron descubrieron el artefacto explosivo frente a su escuela en Luqman Banda, un pueblo en el valle del río Swat. ANSA

EE.UU.

G-7 ve indicios de una mejoría económica
El G-7 constató indicios de mejoría económica en el mundo, pero apuntó que las perspectivas siguen "débiles" y prometió apoyar la recuperación con medidas de estímulo fiscal

CYAN • MAGENTA • YELLOW • BLACK

Can't hide the sun with one hand: corporate thinkers

- *Financial Times (recent editorial)*: denounces the deep crisis of market capitalism and sky high benefits of company CEOs
- *F. Fukuyama (Foreign Affairs)*: “we are witnessing the devastating impact of a non regulated market and the exponential growth of poverty “.

Corporate “green washing”
Converting failure in good
business (“saving face”)

Entrepreneurial green paradigm

- **Business on ecological products and services** make up for new industries, low carbon and wind, biomass, marine, solar energies through market mechanisms (**Gordon Brown**, *Prime Min. United Kingdom – Climate Change Law*).
- **Last generation of bio-fuels**: enzymatic hydrolysis to reduce cellulose, lignin to fermentable compounds (**Al Gore**)
- Food corporations assume environmental demands and lead investments in “food quality”, animal protection, fair trade, among others
(*Harriet Friedmann. From colonialism to green entrepreneurs: social movements and emergence of food regimes, 2009*)



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“Inverse hegemony” in the *progressive* South

Inverse hegemony in Brazil

(F. De Oliveira)

- Hegemony = **force** + consent
- **“Force”** at low intensity.
- **Inverse consent** : not conventional consent of subordinate classes to their exploitation, but of ruling groups, politically conducted by the representatives of the poor, under the condition that their economic invulnerability remains and that any new “moral direction” does not affect capital accumulation.



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The Ethics of Science

*(PhD Program on collective
health and environment)*

Conscientious science

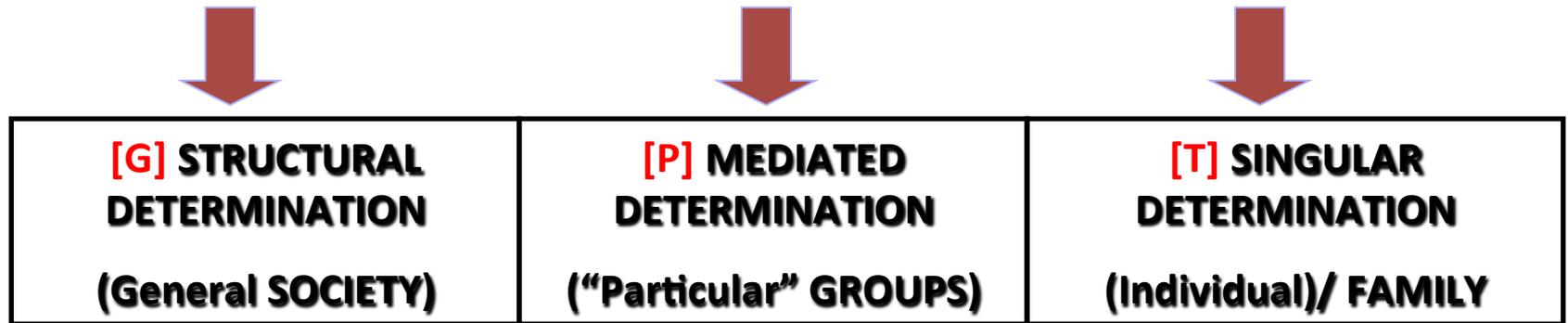
Conscientious science

- Distinguishes reform and reformism
- Consolidates independent academic scenarios based on critical knowledge
- Works “the political triangle” : emancipating social project; organized social groups; and technical capacity.
- Subverts the *rhetoric* of “good living”
- Amplifies health rights and justice
- Works through critical interculturality

Action spectrum

(Ethical perspectives for the promotion and protection of life)

OPTIONS / LEVELS FOR ACTION



[+]

ETHICS
EFFECTIVENESS

[-]

Pharma-bio-medical care and individual prevention model of malnutrition



Supplementation model example

Science for supporting the building
of food sovereignty
“good living”

Perspectives of “Justiciability”

**[1] *Justice in the distribution of land
(Agrarian leaders and researchers)***

- ***Compliance to principles of the social function of land.***
- ***Land reform; limiting size of property holdings.***

[2] *Biocentrism and agro-ecological production (Indigenous organizations, ecologists, and cultural sociologists)*

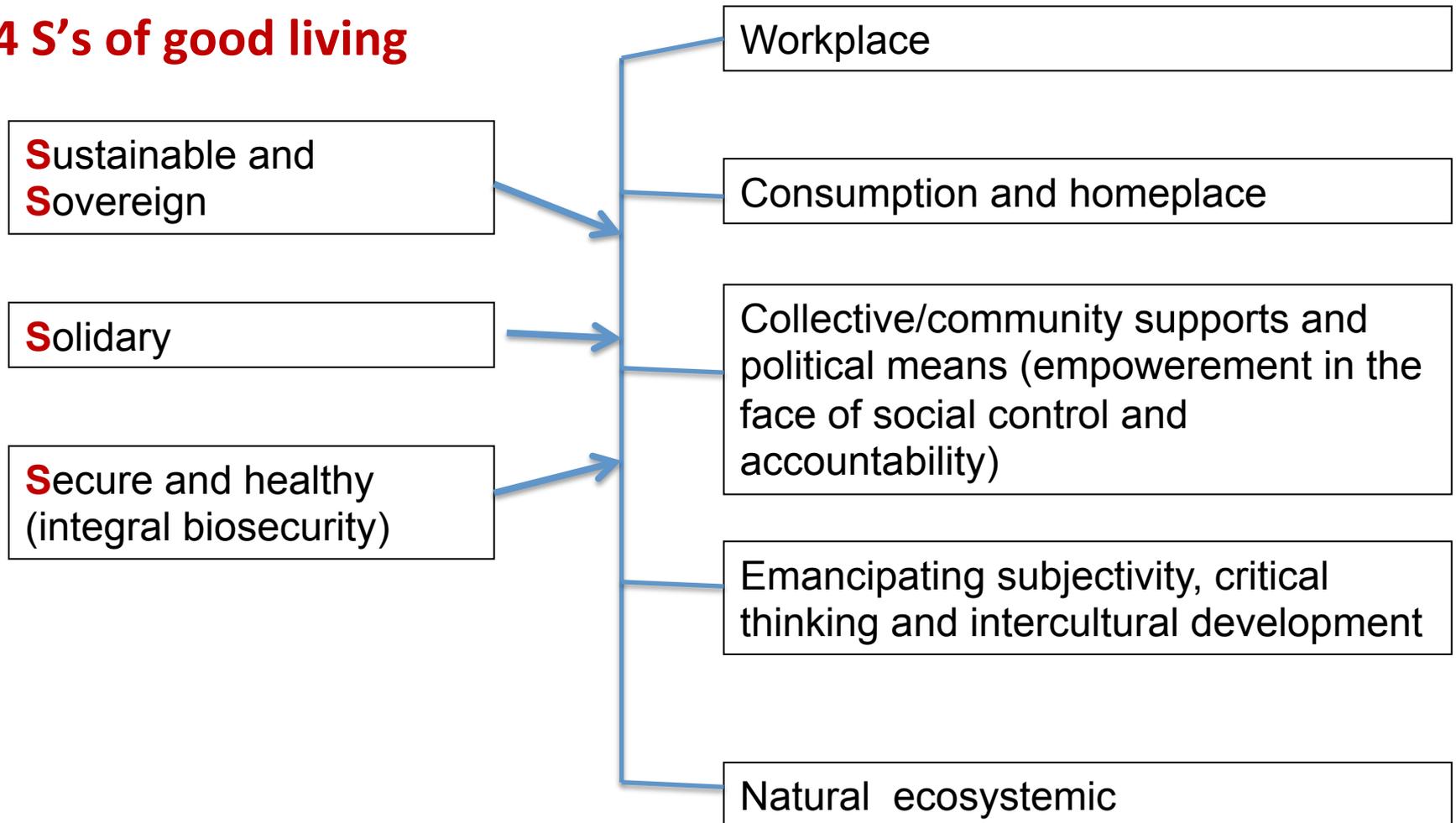
- Preeminence of life
- Moral theory of respect for Nature
- Culture for life
- Agro-ecological production
- Energy rationalization

Socio-biocentrism (*political economists, critical epidemiology and critical ecology*)

- [1] ← → [2]
- Life in the planet develops under an encompassing metabolic process between human beings and nature:
- Inseparable: **economic** justice + **cultural** justice + **health system** justice + **environmental** justice
- Pre requisite: ***sustainable, equitable*** and ***biosecure-healthy*** production and social systems

Critical processes of good living ("buen vivir")

4 S's of good living

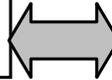


INTERCULTURAL HEALTH DETERMINATION

“HEALTHY HUMANLY LIVING” / “SUMAK KAWSAY”

CRITICAL EPIDEMIOLOGY

INDIGENOUS KNOWLEDGE



HEALTHY MODE OF LIVING:

Distinguishing structural collective patterns of living (group characteristics), from individual free will life styles.

Opposition of healthy, protecting processes from the destructive, unhealthy ones.

SUMAK KAWSAY:

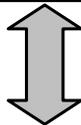
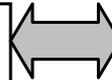
The logic or rationale of collective living; placing life and subsistence in the center .

Kawsay: living in community.

Sumak: notion of good, pleasant, protecting, beautiful.

Emancipating and preventive sense

Autarchic and protector sense



Both emphasize the preeminence of common good, of collective life and harmonious relations with nature. over private logic and interests.



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Health Sciences Core Group



Regional Health and Environment Observatory

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Ejes de invest. /

 **Aceleración, cambio climático y salud**

 **Agroindustria, minería e industria en general**

 **Espacio urbano, ambiente y salud**

 **Sexualidad y Género**

 **Derecho/Comunicación en salud/ Discapacidad**

 **Pequeñas economías, soberanía y salud**

 **Uso peligroso de tecnologías**

 **Salud intercultural / Humanización obstétrica**

 **Sistemas terapéuticos complementarios**

 **Historia de la salud**



Universidad de British Columbia

Coloquio Internacional de Filosofía de la Tecnología en México

Viernes, 14 de septiembre de 2012



El Posgrado en Filosofía de la Ciencia de la Universidad Nacional Autónoma de México, con la participación de miembros de la Unión de Científicos Comprometidos con la Sociedad organizan del 5 al 7 de octubre el Coloquio Internacional de Filosofía de la Tecnología

"Tecnociencia, democracia y participación ciudadana" que propone una reflexión colectiva sobre las tensiones que existen entre ese desarrollo y los sistemas democráticos contemporáneos, así como sobre las implicaciones sociales, éticas y políticas del actual avance tecnocientífico.

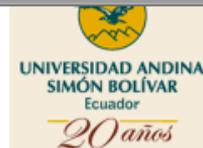
Vigésimo aniversario de la Universidad Andina

Miércoles, 12 de septiembre de 2012

El pasado 24 de julio, la Universidad Andina Simón Bolívar, Sede Ecuador, celebró sus 20 años de creación. En el marco de actividades de aniversario se llevará a cabo el lanzamiento del Observatorio Regional en Salud y Ambiente, este 18 de octubre en el Paraninfo de la institución.







Lo más reciente

- Coloquio Internacional de Filosofía de la Tecnología en México
- Vigésimo aniversario de la Universidad Andina
- Encuentro Latinoamericano por la Salud Bucal Colectiva en Colombia
- Monsanto: mucho peor que Glifosato
- Universidad de British Columbia de Canadá otorga reconocimiento científico a Jaime Breilh
- Vandana Shiva y Alberto Acosta hablan sobre el Yasuní y su futuro
- Reciclando a Cielo Abierto
- Crece la amenaza de crisis alimentaria mundial por clima y biocombustibles

Visita nuestra galería



- Galería fotográfica
- Audios
- Documentos de interés

“A human being is part of the whole, called by us 'Universe,' a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest - a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole nature in its beauty. Nobody is able to achieve this completely, but the striving for such achievement is in itself a part of the liberation, and a foundation for inner security“.

- A. Einstein, 1950



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Thank you

Jaime Breilh, Md. MSc. Ph.D
Health Sciences Area

Universidad Andina "Simón Bolívar"

www.uasb.edu.ec/saludyambiente

Bioseguridad (integral biosecurity)

- Integral biosecurity of food: secure genetic base of food, no contaminants (chemical, antibiotics, hormones)
- Anti monopoly policies
- Safety of food, water, air, working procedures, transport
- No patents on vital resources for food sovereignty and security; banning commodifying nature and knowledge
- Safe accessible independent scientific information and communication and democratic information for accountability and social control.

Sustainable Capacity

- **Vital Capacity: integral notion of productivity of a socio-ecosystem to make it capable of sustaining the reproduction and refinement of life, and of the economic, cultural, and political conditions that guarantee sumak kawsay (healthy humanly living) under equitable relations for present and future generations.**

Solidary

- **Preeminence of rights (human and nature);**
- **Access to quota for sustainable, fair, dignified and secure living;**
- **Conscious consumption and collective consensus of need;**
- **Restriction and responsible management of S-N metabolism and waste:**
- **Balance of present and future resources;**
- **Cultural justice and plentiful identity;**
- **Right to participate in social-public conduction of policy, management and social movement;**
- **The right to social and community supports and protection.**
- **The right to participate in the expansion of justiciability.**

Healthy (biosecure)

- **Healthy biosecure metabolism and health implies a mode of living which enables:**
- **Preeminence of protecting elements, collective, familial and individual supports and resources to cope with destructive ones;**
- **To allow for preeminence of physiological and psychological patterns to sustain a good physiological and psychological quality of life;**
- **Posibilitating longevity in accordance to present knowledge and maximum human potential;**
- **Capacity to cope with harmful and unhealthy processes and to maintain optimal phsysical and psychological phenotype and genotype potential, and plnetiful physical activitiesa according to ages, with maximum enjoyment, pleasure and spirituality.**

Biosecurity

- Protection of safe genetic structure of food;
- Protection and promotion of healthy family agriculture geared at food sovereignty and anti monopoly policies;
- Quality certification of food;
- Compulsory differentiated farm certification;
- Banning of GM crops and commodification of life,
- Banning private appropriation of knowledge and technologies;
- Democratization of information production and dissemination systems.

COMPLEMENTARY PERSPECTIVES

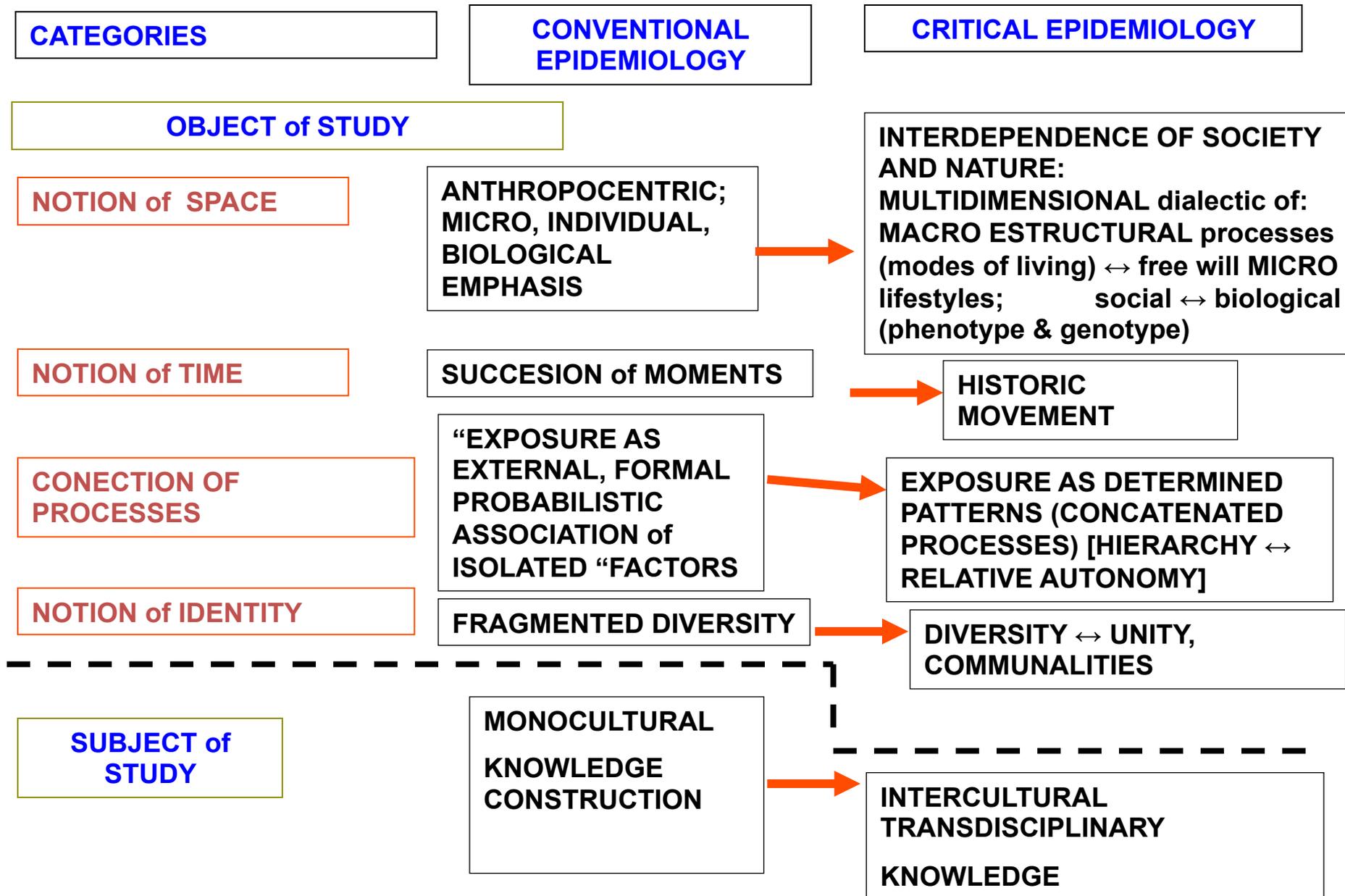
**IMPORTANT &
INNOVATIVE VISIONS**

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graph TD; A[IMPORTANT & INNOVATIVE VISIONS] --- B[Critical epidemiology]; A --- C[Indigenous holism]
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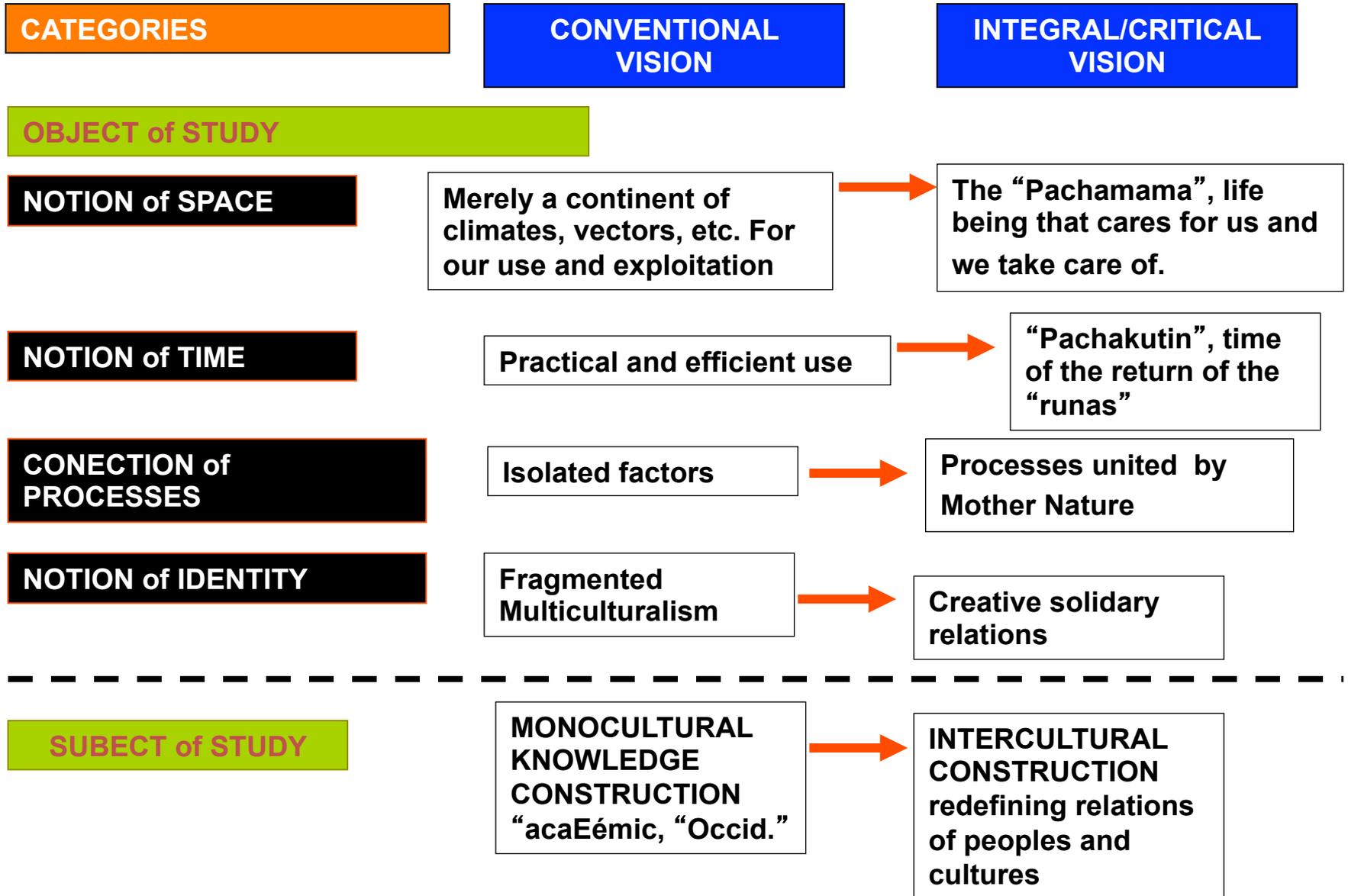
**Critical
epidemiology**

Indigenous holism

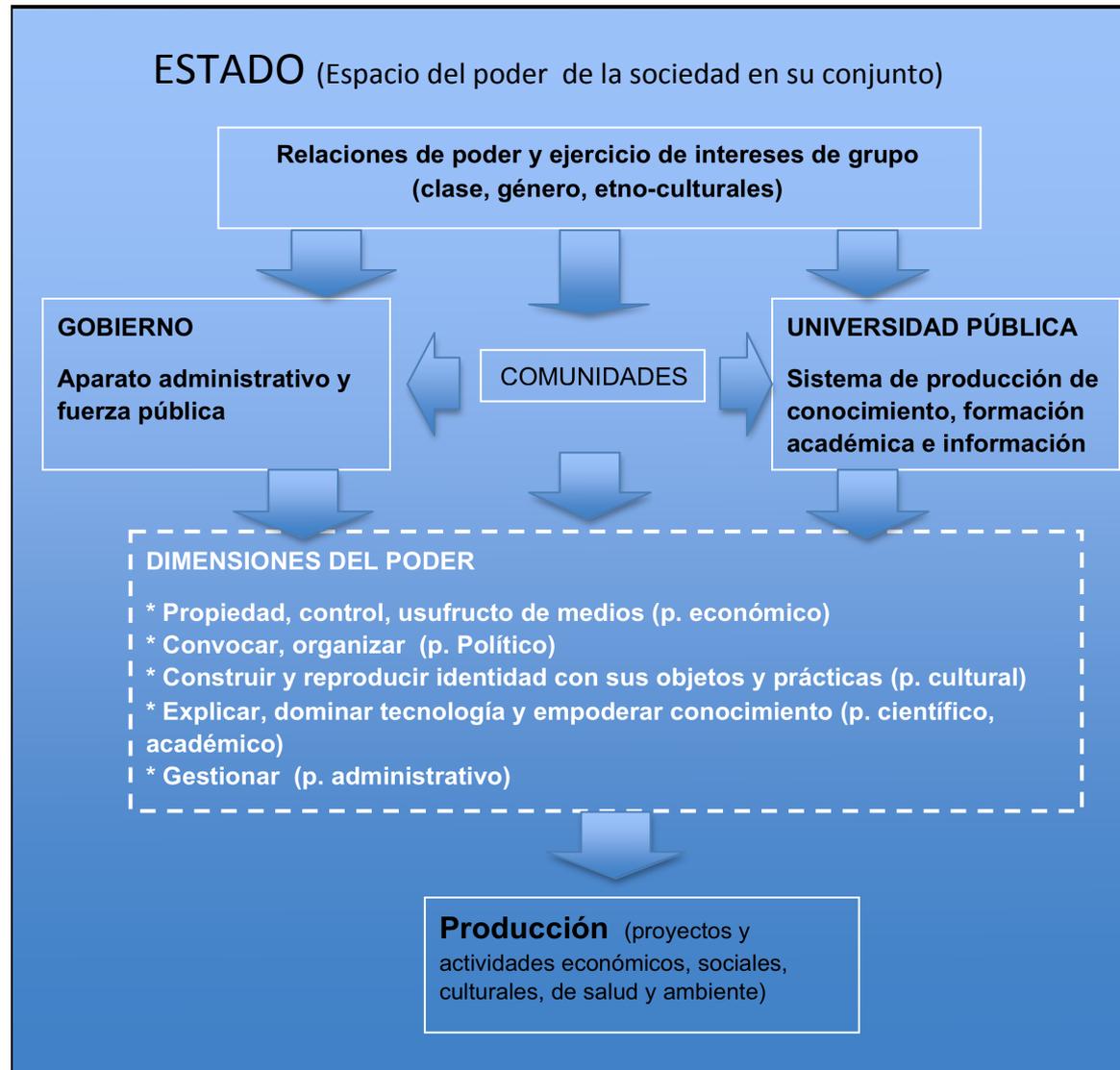
Contributions of Critical Epidemiology



Contributions of Indigenous Knowledge for the Reconceptualization of Health



ESTADO, UNIVERSIDAD PÚBLICA Y COMUNIDAD



Fuente: Breilh, J. Hacia una universidad soberana, de excelencia y crítica.
Quito: Doctorado de salud colectiva, ambiente y sociedad de la Universidad
Andina Simón Bolívar – Sede Ecuador, septiembre 2011

Procesos críticos (*Critical processes*)

- Aceleración, distorsión climática y deterioro ecosistemas
Economic acceleration, climate distortion and human ecosystem deterioration;
- Expansión de empresas de gran escala y monopolios, pérdida de soberanía y usos peligroso de tecnología *Big scale business and industrial monopoly expansion, loss of sovereignty, and hazardous application of technology;*
- Desestructuración de pequeñas y medianas economías *Destructuring of family and middle size business;*
- Urbanización caótica, fraudulenta e inequitativa, con deterioro de los ecosistemas urbanos *Chaotic, inequitable and fraudulent urbanization and deterioration of urban ecosystems;*
- Debilidad y desterritorialización jurídica en la justicia social, de género, etnocultural y ambiental *Juridical weaknesses, legal deterritorialization, related to social, cultural gender and ethnic justice,*
- Debilidad institucional, contención y debilidad de la participación y de los mecanismos de rendición de cuentas *Health sector institutional weakness, weakness of participatory management and accountability.*

A PERSPECTIVE FOR EPIDEMIOLOGICAL INNOVATION

(21st Century Health Research) (J.B.)

- 1) Incorporate **multidimensional analysis** (macro & micro orders) recognizing the dialectics of the generative potential of the individual, local, order, and the reproductive conditioning of the general, macro social order determined by the logic of capital accumulation.
- 2) Work in the simple/complex; **simplicity/complexity** dialectics.
- 3) Incorporate **diversity** (social, ethnic, gender, generational) without losing sight of the communalities, codeterminations and the movement of diversity and structural determination.
- 4) Understand in our interpretative models the **irregular, fussy, uncertain processes**, without losing sight of moments and expressions of regularity and historical, changing structural determinations.
- 5) **Overcome the nomothetic and causal determinism logics**, which have converted the search for constant conjunctions and causal explanations -with their linearity and reductionism-, and quantitative analysis, as the keys of scientific work.

Economic reproduction requires a social-cultural model where the **golden rule** is: submitting all forms of social reproduction to the capital accumulation process

Cultural model of market modernity

(Echeverría, 2003)

- **Anthropocentricity**
- **Consumerism**
- **Urbanicism**
- **Economicism**
- **Individualism**