

VETERINARY SERVICES SUSTAINABILITY: EXPERIENCES AND CHALLENGES

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IICA



ORGANIZACIÓN MUNDIAL DE SANIDAD ANIMAL

Proteger a los animales, preservar nuestro futuro

**24a CONFERENCIA DE LA
COMISIÓN REGIONAL DE LA OIE PARA LAS AMÉRICAS**
Punta Cana, República Dominicana, 19 al 23 de noviembre de 2018

SUSTAINABILITY



Income increase





ECONOMICS

“the science which studies
human behaviour as a
relationship between ends
and scarce means which have
alternative uses’

(Citado por Backhouse, 2002 en
Rushton, 2009)



From job to profession



2500 A.C.

Chinese healing horses, buffalo, oxes

500 Romanos

Book “what veterinarians do”

Animals – pets – human

- ✓ Territory conquest
- ✓ Land cropping
- ✓ Food supply



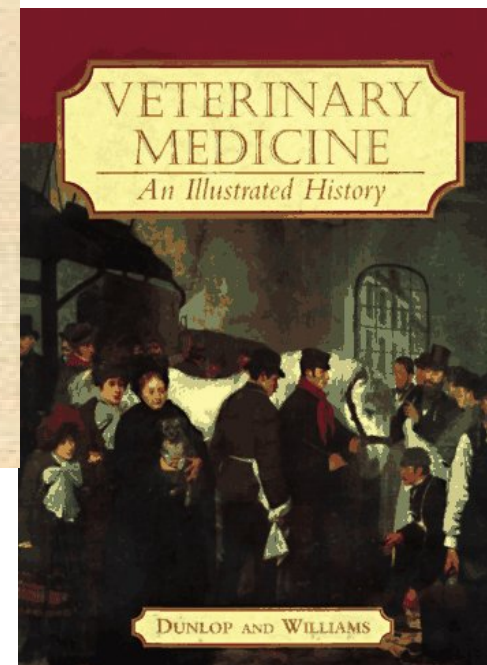
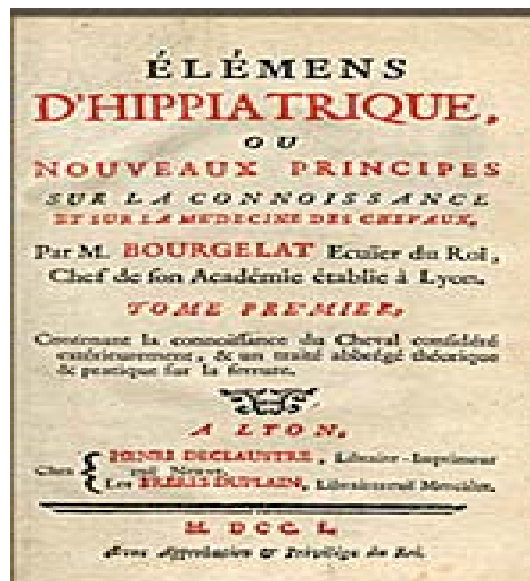
1740

Claude Bourgelat
*Director of the Lyon Academy of
Horsemanship*



1761

Luis XV
Teaching cattle diseases
Royal Veterinary School





ORGANIZACIÓN MUNDIAL DE SANIDAD ANIMAL

Proteger a los animales, preservar nuestro futuro



Breve historia

1920

- + En 1920 la peste bovina se manifiesta inopinadamente en Bélgica, a raíz del tránsito por el puerto de Amberes de cebús de Asia del Sur con destino a Brasil.

1924

- + A pesar de la lentitud inherente a las negociaciones entabladas por vía diplomática, veintiocho Estados acuerdan firmar un "convenio internacional" el 25 de enero de 1924. Con la ratificación del Convenio de 1924 se crea la Oficina Internacional de Epizootias (OIE), cuya creación corresponde a un deseo claramente expresado por el Secretario General de la Sociedad de Naciones.

1927

- + A principios de 1927, veinticuatro Estados, países o dominios ratifican el Convenio de 1924, y el Comité Internacional de la Oficina Internacional de Epizootias celebra su primera Sesión General el 8 de marzo de 1927. Veintiséis Delegados participan en esta Sesión. La Asamblea de Delegados elige como Presidente al Inspector General De Roo, Delegado de Bélgica, y nombra Director General de la Oficina al Profesor Leloir. La Asamblea decide publicar un *Boletín*.



*Declaration of world-freedom from rinderpest
at the 79th OIE General Session (2011)*

World Veterinary Year

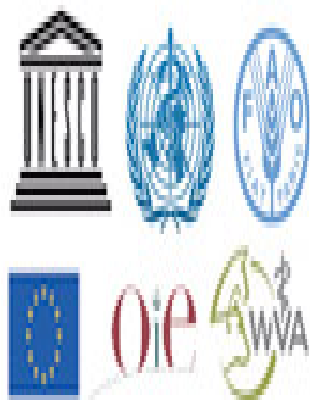
Vet for health,

Vet for food,

Vet for the planet !

270 years after the discovery of
America.

Only **257 years** teaching
professionals.



VETERINARY SERVICES

“means the governmental and non-governmental **organisations** that **implement** animal health and welfare measures and other standards and recommendations in the Terrestrial Code and the OIE Aquatic Animal Health Code in the territory.”



ORGANIZACIÓN MUNDIAL DE SANIDAD ANIMAL

Proteger a los animales, preservar nuestro futuro



Veterinary Services

Restructuring



Animal disease control



Animal disease control and eradication



Animal **health and welfare**, both domestic and wild from terrestrial, and aquatic systems.



Trade - Food Safety - Public health- environment – SDG



Table I
Selected indicators for Latin America and the Caribbean

Indicator	Regional total	Range	Source
Population	650 million	Montserrat 5,000; Brazil 200 million	(1)
Urbanisation	79%	Saint Lucia 18.5%; Uruguay 95.4%	(1)
Agricultural GDP growth (2010–2013)	2.9%	Honduras 6.8%; Trinidad and Tobago 12.4%	(2)
Agricultural share of GDP	5%	Chile 2.6%; Uruguay 17%	(3, 4)

GDP: Gross domestic product

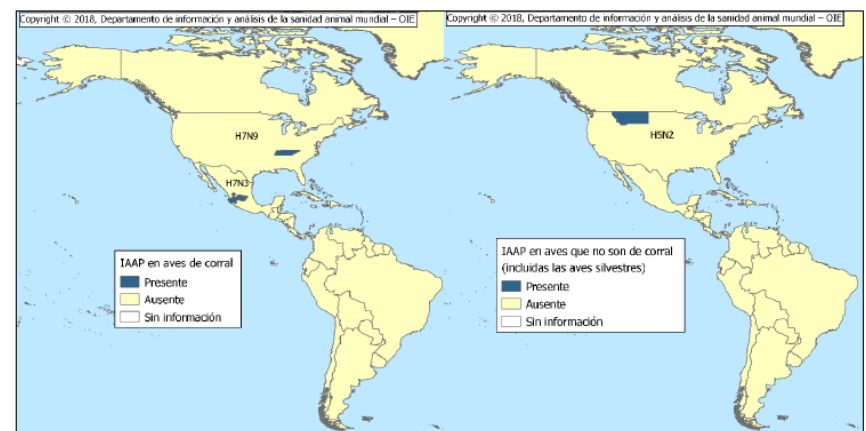
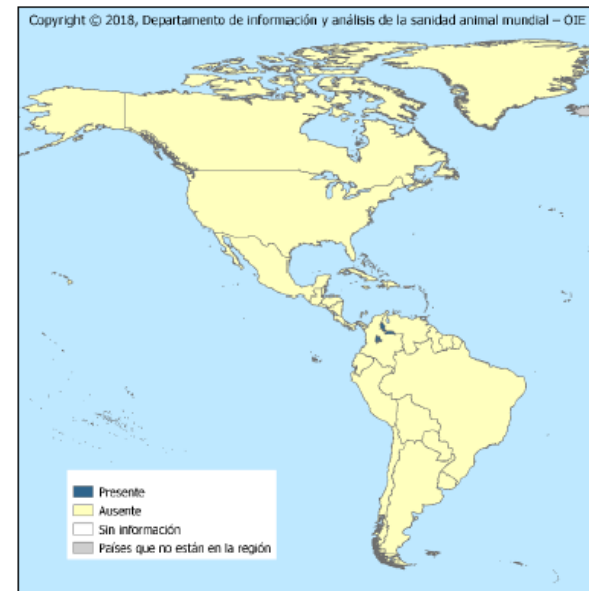
Table II
Countries with the highest livestock populations in Latin America and the Caribbean

Their country's share of total LAC production is given as a percentage

Source: Economic Commission for Latin America and the Caribbean (2)

Country	Beef cattle	Dairy cattle	Pigs	Poultry	Sheep
Brazil	53%	52%	45%	39%	21%
Argentina	12%	–	–	–	18%
Mexico	–	5.5%	18%	16%	–
Colombia	8%	12%	–	–	–

LAC: Latin America and the Caribbean



Awada *et al.* 2018; OIE , 2018

Animal protein trade

TABLE 5
CHANGES IN GLOBAL TRADE OF
LIVESTOCK PRODUCTS 1967 TO 2007

ITEM	EXPORT (million tonnes)		
	1967	2007	2007/1967
Pig meat	1.48	11.13	750%
Beef and buffalo meat	2.41	9.46	392%
Eggs, primary	0.33	1.44	442%
Milk, total	18.84	93.19	495%
Poultry meat	0.39	12.66	3 206%
Sheep and goat meat	0.58	1.04	180%

Source: FAOSTAT.

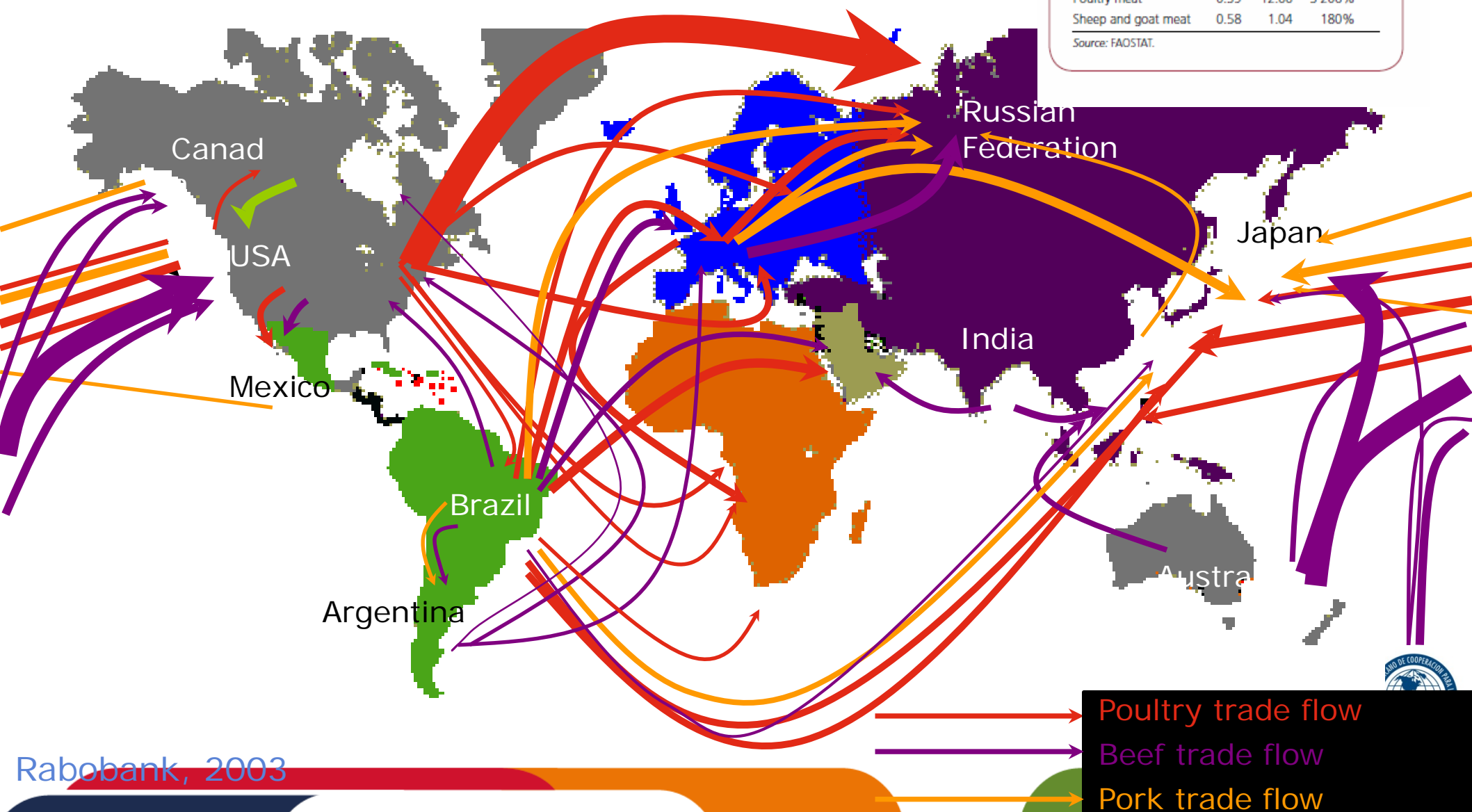


Table III**Meat production and world ranking of selected countries in Latin America and the Caribbean in 2015**

Country	Beef and veal		Pork		Broiler chickens	
	10 ³ Mt	World ranking	10 ³ Mt	World ranking	10 ³ Mt	World ranking
Brazil	9,425	2	3,451	4	13,080	2
Argentina	2,740	6	—	—	2,060	8
Mexico	1,845	8	1,335	9	3,100	7
Colombia	895	12	—	—	—	—
Paraguay	590	15	—	—	—	—
Uruguay	565	16	—	—	—	—

Mt: metric tonnes

Table IV**Meat exports and world ranking of selected countries in Latin America and the Caribbean in 2015**

Based on available data (9) and counting the European Union as one country

Country	Beef and veal		Pork		Broiler chickens	
	10 ³ Mt	World ranking	10 ³ Mt	World ranking	10 ³ Mt	World ranking
Brazil	1,625	2	565	4	3,740	1
Paraguay	400	6	—	—	—	—
Uruguay	360	7	—	—	—	—
Argentina	230	11	—	—	200	7
Mexico	245	10	130	7	—	—
Chile	—	—	185	6	95	11

Mt: metric tonnes

Table V**Meat export share of country production of selected countries in Latin America and the Caribbean in 2013**

Export share	Beef		Sheep		Pigs		Poultry	
High	Paraguay	66.2%	Uruguay	50.2%	n/a		n/a	
	Nicaragua	93%*						
	Uruguay	60.8%						
Medium	n/a		Chile	32.5%	Chile	27%	Brazil	29.1%
Medium to low	Brazil	19.7%	n/a		Brazil	14.5%	Argentina	15.8%
	Mexico	19.7%					Chile	15.8%
							Uruguay	13.1%

n/a: no meat exports fall into this category in the countries selected

Source: Data from (2) and (7)*

The role of animals in society

Deep changes in the relationship with animals and their management in the last 40 years:

- high proportion of farm animals in standardized systems where the value of the individual is proportionally decreasing;
- high individual value to pets and sport animals;
- in general growing demand for healthy animals.

VS challenges

Old and new problems



VETERINARY SERVICES EMBEDDED IN THE PUBLIC SECTOR

Veterinary Services are under the overall control and direction of the [Veterinary Authority](#). Private sector organisations, [veterinarians](#), [veterinary paraprofessionals](#) or aquatic animal health professionals are normally accredited or approved by the [Veterinary Authority](#) to deliver the delegated functions.

About 100% public



Over 80% private

Governmental Veterinary services



FINANCIAL SUSTAINABILITY AND QUALITY CRISIS

CHALLENGES OF ANIMAL HEALTH IN LAC

- Trade diseases eradication
- Risk analysis and status demonstration
- Emergency management
- Zoning and compartmentalization
- Backyard production systems and wild animals
- Food safety
- AMR and animal welfare
- International forum
- Negotiation
- Service modernization
- Endemic disease control





Animal Health Management

Animal Health Programs:

Formalization of systematic **decisions** about health promotion and disease control within specific context and scope

MULTI-STAKEHOLDER DECISION MAKERS

ANIMAL HEALTH PROGRAMS



DECISIONS



RESOURCES ALLOCATION



TRADE OFF



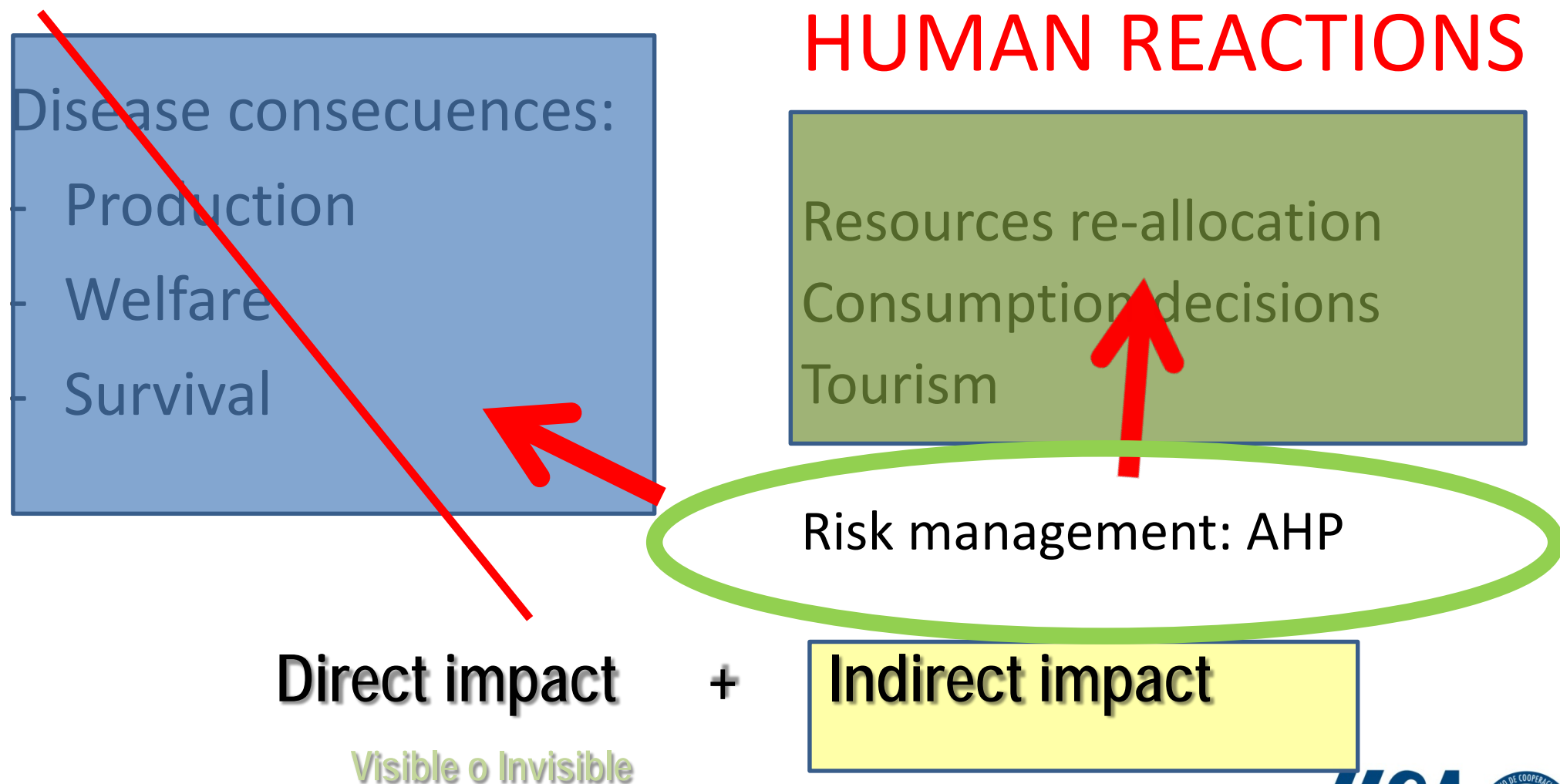
COSTS



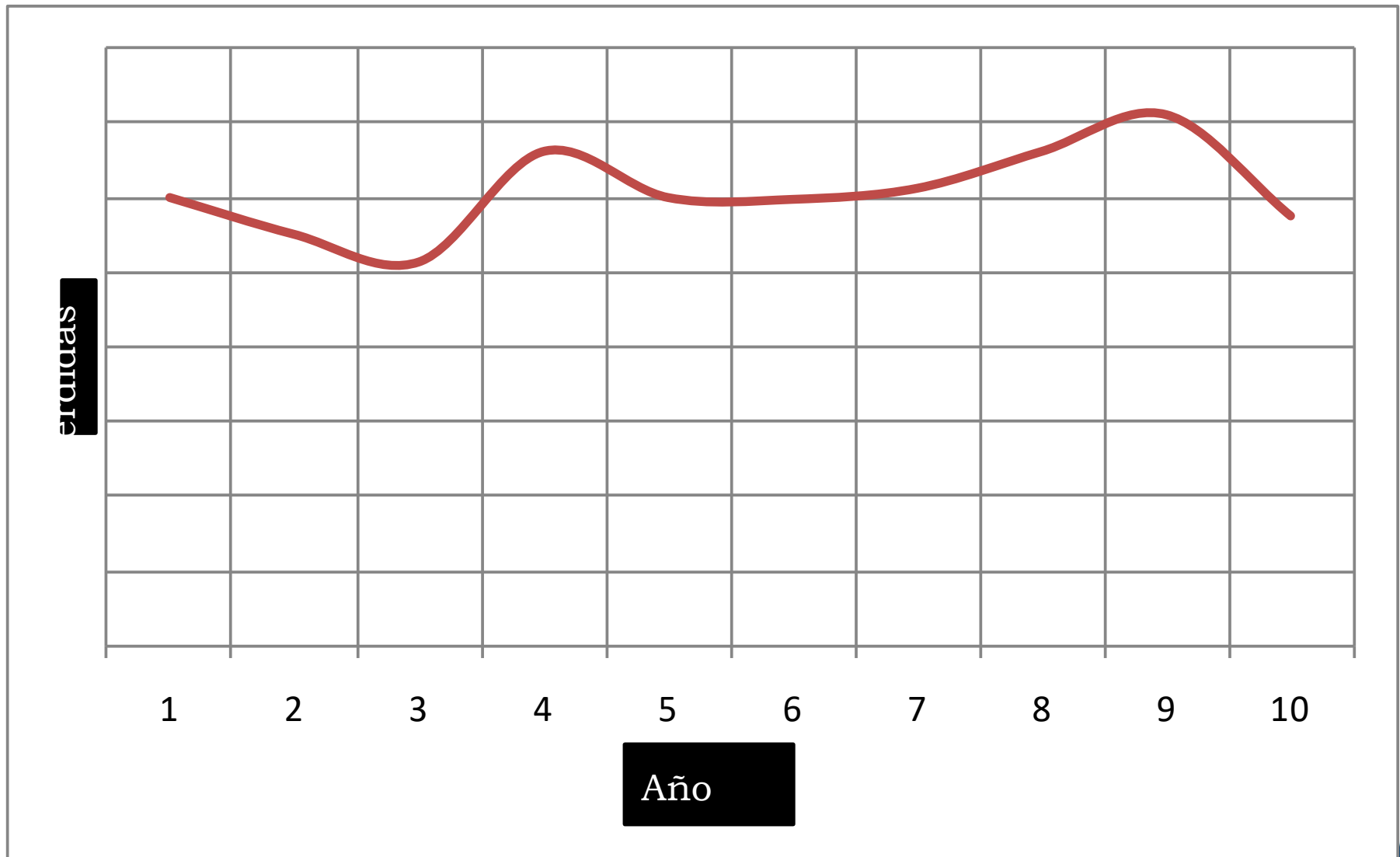
BENEFITS



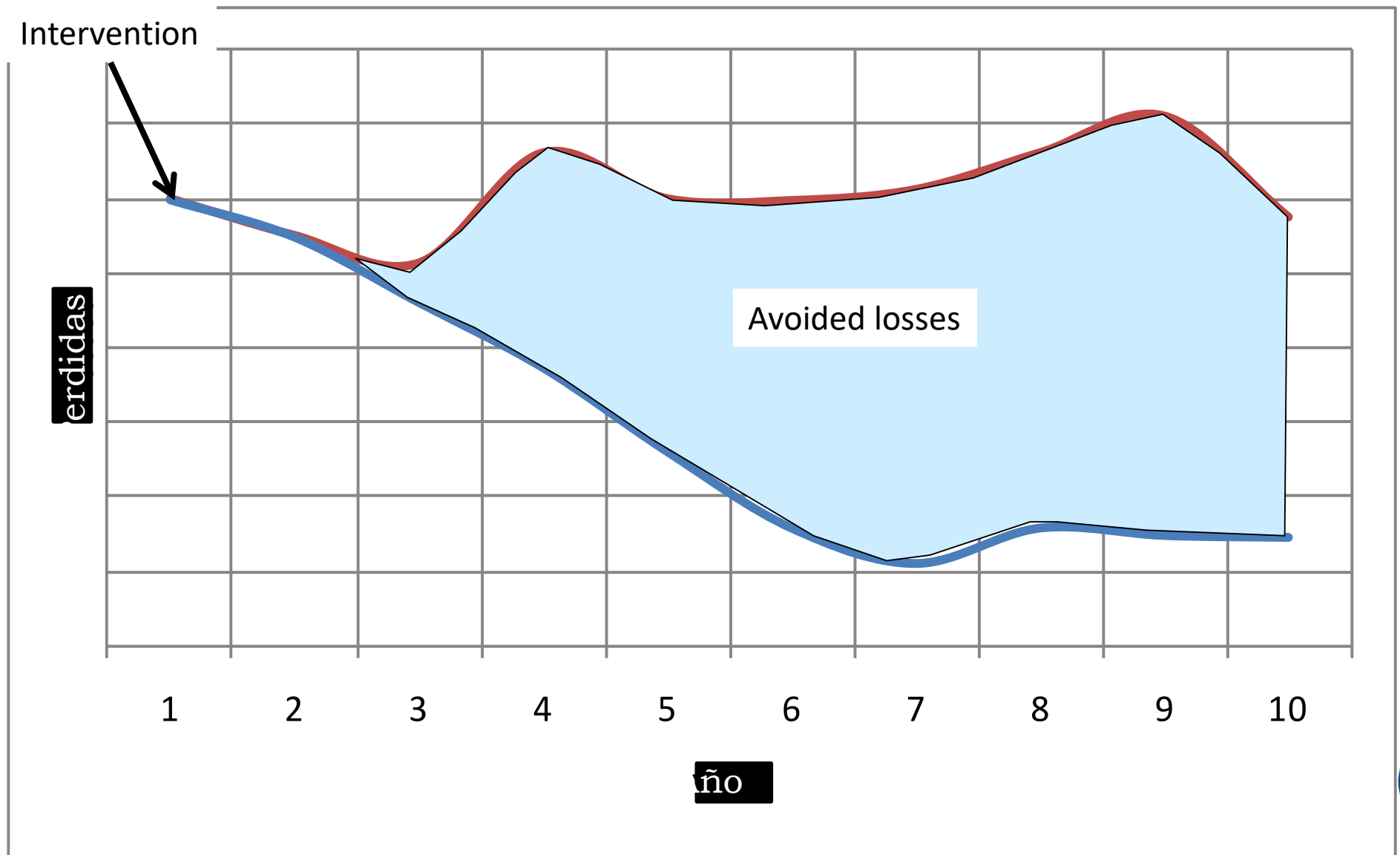
ANIMAL DISEASES ARE AN ECONOMIC ISSUE



Long term losses



With and without intervention losses



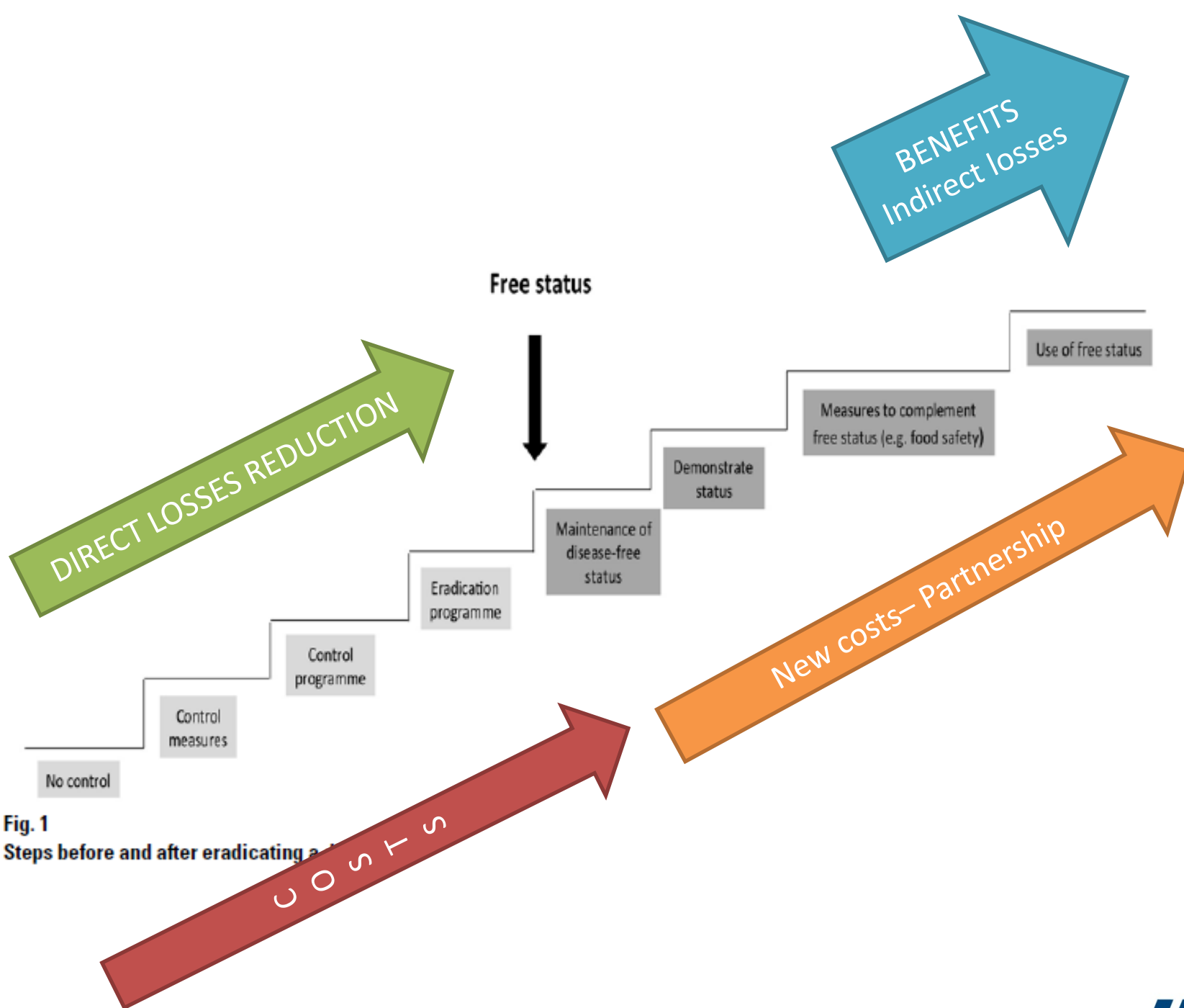
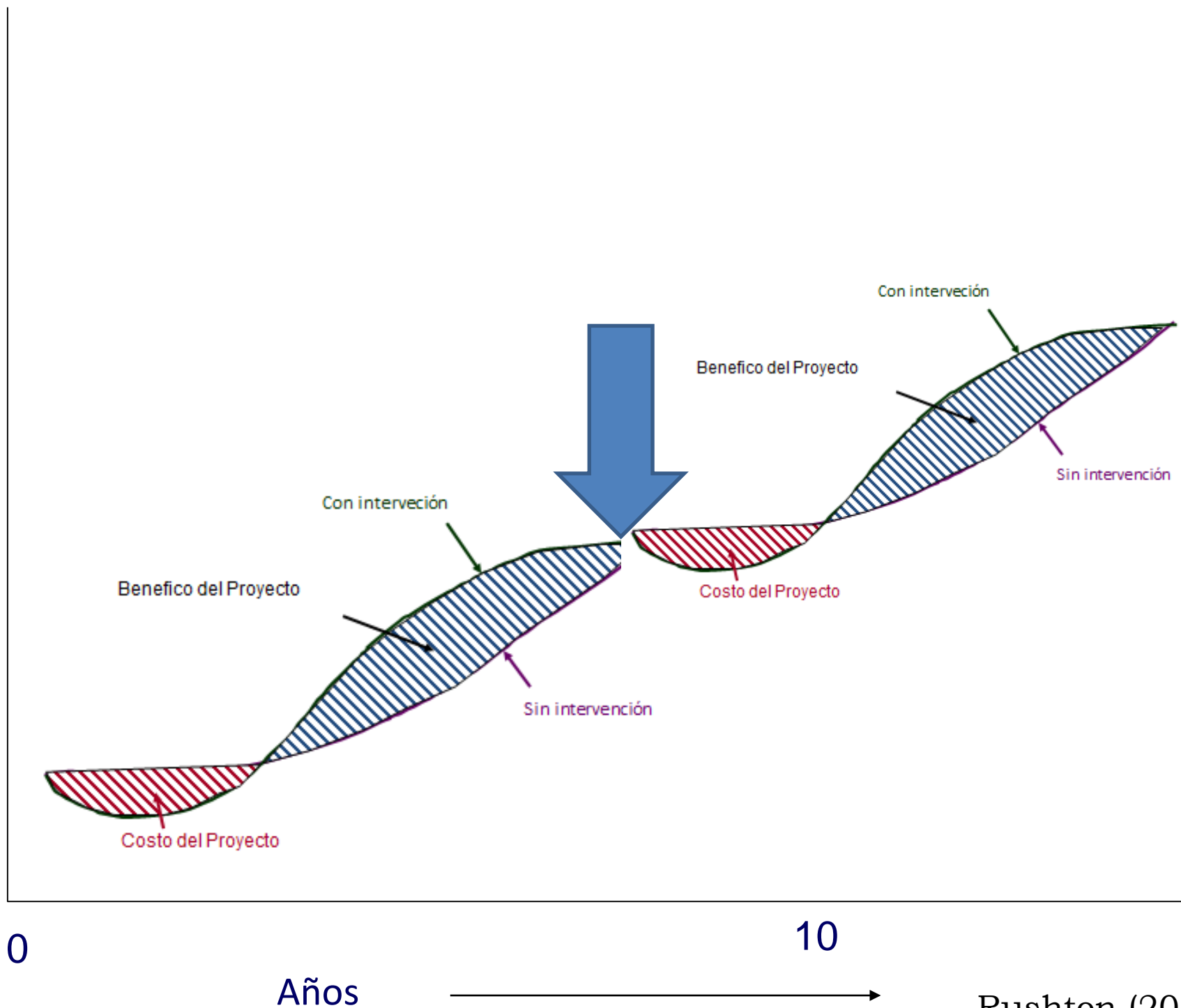


Fig. 1
Steps before and after eradicating a disease

Beneficios
menos
costos
(US\$)



Animal health program stages

- Design and management
- Delivery
- Financing

Restructuring guideline

Tipo	substraible	excluible
Private	si	si
Public	No	No
Toll good	No	Si
Comunal	Si	No

Tabla 2. División de servicios entre el sector público y el privado

Servicio	Público	Privado	Comentario	Referencia
Curativo		X		7,17
Tratamiento y Diagnóstico		X		17, 20,21
Soporte diagnóstico		X	Externalidades Positivas	20,21
Suministro de Fármacos		X		7,17
Producción de vacunas y fármacos		X		20,21
Inseminación artificial		X		17,20,21
Programas de Vacunación	X*	X	Externalidades positivas	7,20,21
Inoculaciones		X	Externalidades positivas	7
Control de garrapatas	X*	X	Externalidades positivas	7,20,21
Extensión	X *	X	Según medio de comunicación.	7,20,21
Investigación	X	X	Según derechos de propiedad.	17,20,21
Inspección de Alimentos	X			7,9,11,17
Control de Movilización	X			7,17
Vigilancia Epidemiológica	X			17,20,21
Control de calidad de fármacos	X			17,20

* Bajo condiciones especiales

Table I
Suggested channels for livestock service delivery

Animal health function	Appropriate delivery channel		Economic characteristic
	Public	Private	
Disease surveillance, prevention, control and eradication of:			
Highly contagious diseases with serious socio-economic, trade and public health consequences	✓	✓	Public good
Diseases of low contagion	✓		Private good with externalities
Quarantine and movement control	✓		Measures to correct for externalities
Emergency response	✓		Public good
Veterinary inspection	✓		Measures to correct for 'moral hazard'
Wildlife disease monitoring	✓		Public good
Zoonosis control	✓		Measures to correct for externalities
Disease investigation and diagnosis	✓	✓	Private good with externalities
Drug/vaccine quality control	✓		Require measures to correct for 'moral hazard'
Production and distribution of drugs and vaccines		✓	Private good
Vaccination and vector control	✓	✓	Private good with externalities
Research, extension and training	✓	✓	Public and private
Clinical diagnosis and treatment		✓	Private good
Food hygiene and inspection	✓		Measures to correct for 'moral hazard'
Residue testing	✓		
Food safety tasks	✓		Public good
Compliance monitoring	✓		Public good

FINANCING

- Public funds.
- Compulsory – taxes and para-taxes.
- Donations.
- Cost-recovery and sales.

Economics of animal health and decision making

- Budget allocation
 - Prioritization
 - Efficiency
- Looking for additional funds
 - Public funds (ME)
 - Donors
 - Public-private partnership



<http://www.washington.edu/uwit/im/roadmap/report/images/decision.jpg>

ANIMAL HEALTH PROGRAM GUIDELINE



USDA



ERS

Oie WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future
With the support of:
BILL & MELINDA GATES foundation 

How can public-private partnerships strengthen the capacities of national Veterinary Services?



ISVEE 14
3 - 7 November 2015
Mérida, Yucatán, México



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International Society for Economics
and Social Sciences of Animal Health



ISVEE Pre(Post) Course

Using Economics for Animal Health Decision Making

Research

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Research News

NEAT -Networking to enhance the use of economics in animal health education, policy making and research in Europe and beyond

05 October 2012

Training on the use of economics for animal health has been available since the 1980s, however it has never been institutionalised within the educational courses for animal health professionals. A gap recognised by individual economists, but it is relatively recent that a cadre of animal health economists has come together to share how to improve the use of economics in animal health. This group exists because of an increasing demand for disease impact assessment, improvement of the allocation of resources for disease surveillance and control and discussions on who should meet animal health costs with a cost-sharing framework. This all indicates a clear demand for economics in animal health.

The cadre of economists are skilled and experienced in teaching economics to animal health professionals and passionate in promoting the best use of economics in animal health. However, they recognise their current limitations to meet together frequently in order to develop and strengthen the educational materials and delivery methods. This has stimulated the creation of the NEAT consortium that links different sectors covering higher education, research, industry, private consultants, public bodies and international organisations. All partners have strong links through training, research and consultancy to the animal health services and livestock sectors of member states. NEAT covers the major livestock producing areas of Europe and supports areas where livestock are less important and where skills in the use of economics are relatively weak.

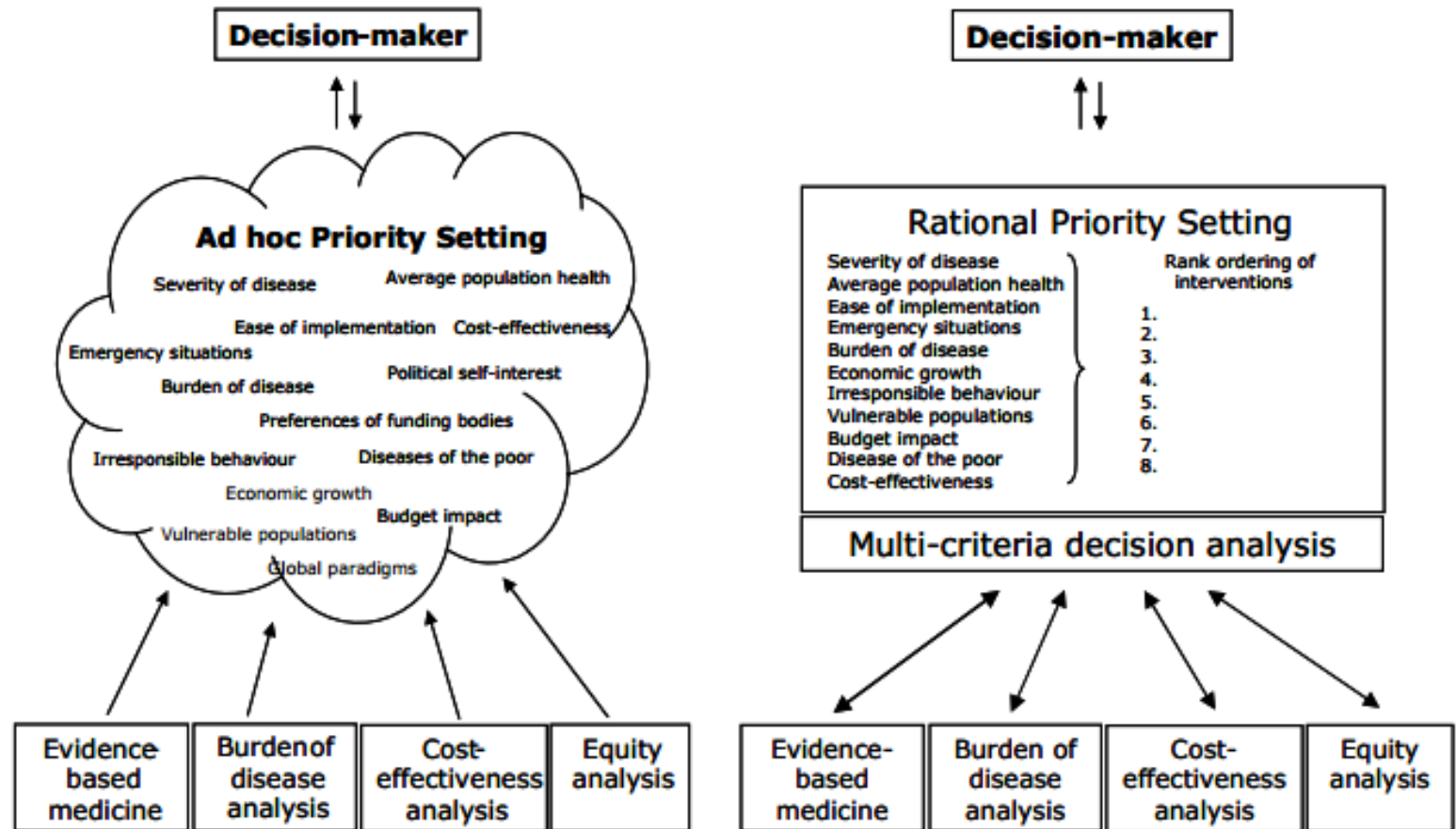


ECONOMÍA DE SALUD ANIMAL



Figura B. Proceso de fortalecimiento de capacidades en economía de salud animal, años 2015-2017.

MULTICRITERIA –DECISION



2016

CRITERIO	PONDERADOR	clostridiosis	brucelosis	haemonchus	pietin	ectima contagioso	oestrus	neosporosis	linfo adenitis	keratoconjuntivitis
Enfermedad multi especie	0	3	1	2	3	2	2	3	2	3
impacto carne	0.3	3	2	3	3	3	1	1	1	2
impacto salud publica	0.1	1	1	0	0	1	0	1	0	0
Impacto en consumo	0.3	0	0	0	0	0	0	0	0	0
Factibilidad tecnica	0.2	3	2	2	2	2	3	1	2	2
Incidencia	0.1	3	1	3	2	2	1	1	2	3
Mercado internacional	0	3	3	0	0	0	0	0	0	0
TOTAL	1	1.9	1.2	1.6	1.5	1.6	1	0.7	0.9	1.3
RANKING		1	6	2	4	2	7	9	8	5



Convenio de cooperación técnica IICA – CAS/CVP
Curso Evaluación Económica de Programas de Salud Animal.

Buenos Aires, Argentina, 28 de junio al 1º de julio de 2016



Convenio de cooperación técnica IICA – CAS/CVP

Proyecto

“Evaluación Económica de Programas de Brucelosis y Tuberculosis bovina”

“Taller inicial para la elaboración de estudios de evaluación económica de los programas sanitarios oficiales orientados al control de la Brucelosis y Tuberculosis bovina”



Análise Benefício-Custo

Taxa de desconto	6,000%											
Ano	0	1	2	3	4	5	6	7	8	9	10	11
Custos	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
vacinação	1.585.671,83	6.947.330,91	5.625.470,61	11.328.852,30	9.855.273,41	9.236.917,80	11.423.697,15	12.181.862,27	11.071.968,82	13.429.718,62	10.427.162,64	12.645.587,51
testes rotina	3.040.259,59	3.162.465,88	3.461.840,71	3.420.401,38	3.514.675,00	3.590.212,50	2.967.300,00	3.446.225,00	3.233.350,00	2.433.550,00	2.253.325,00	2.131.687,50
educação/comunicação	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
fiscalização SVO	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
estudos prevalência	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	773.919,90
treinamentos	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Custo Fixo do SVO	6.185.008,96	6.185.008,96	6.185.008,96	6.185.008,96	6.185.008,96	6.185.008,96	6.185.008,96	5.741.716,63	6.489.088,97	8.534.640,01	9.213.973,86	10.525.143,72
8	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CUSTOS	10.810.940,38	16.294.805,75	15.272.320,28	20.934.262,63	19.554.957,37	19.012.139,26	20.576.006,11	21.369.803,90	20.794.407,79	24.397.908,63	21.894.461,50	26.076.338,63
Benefícios	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Abortos Evitados	0,00	0,00	0,00	0,00	13.869.568,95	20.147.901,06	28.045.789,73	36.262.766,73	43.953.042,81	50.408.314,84	56.515.169,89	61.464.978,06
mortalidade perinatal evitada	0,00	0,00	0,00	0,00	7.859.422,40	11.417.143,93	15.892.614,18	20.548.901,14	24.906.724,26	28.564.711,74	32.025.262,93	34.830.154,24
substituição de vacas Leite	0,00	0,00	0,00	0,00	1.739.953,80	2.527.577,97	3.518.377,43	4.549.206,89	5.513.961,11	6.323.782,60	7.089.894,78	7.710.854,06
ganho rendimento leite	0,00	0,00	0,00	0,00	763.958,95	1.089.647,18	1.472.854,67	1.895.397,84	2.346.609,95	2.819.605,42	3.308.786,02	3.584.400,00
mortalidade vacas	0,00	0,00	0,00	0,00	287.555,82	417.723,59	581.469,40	751.830,82	911.272,23	1.045.108,48	1.171.721,04	1.274.344,72
6	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
7	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
8	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL BENEFÍCIOS	0,00	0,00	0,00	0,00	24.520.459,91	35.599.993,73	49.511.105,42	64.008.103,43	77.631.610,36	89.161.523,08	100.110.834,66	108.864.731,07
BENEFÍCIOS-CUSTOS	-10.810.940,38	-16.294.805,75	-15.272.320,28	-20.934.262,63	4.965.502,54	16.587.854,48	28.935.099,31	42.638.299,53	56.837.202,57	64.763.614,46	78.216.373,16	82.788.392,45
FATOR de ATUALIZAÇÃO	1,0000	0,9434	0,8900	0,8396	0,7921	0,7473	0,7050	0,6651	0,6274	0,5919	0,5584	0,5268
Custos corrigidos	10.810.940,38	15.372.458,26	13.592.310,68	17.576.810,58	15.489.357,82	14.206.976,44	14.505.272,39	14.212.140,10	13.046.668,70	14.441.084,63	12.225.752,94	13.736.689,90
Benefícios corrigidos	0,00	0,00	0,00	0,00	19.422.500,92	26.602.386,27	34.903.375,64	42.569.044,51	48.707.032,74	52.774.568,52	55.901.367,19	57.348.582,28
VA (B-C)	-10.810.940,38	-15.372.458,26	-13.592.310,68	-17.576.810,58	3.933.143,10	12.395.409,83	20.398.103,25	28.356.904,41	35.660.364,04	38.333.483,89	43.675.614,24	43.611.892,39
Valor Presente Líquido (NPV)	159.445.655,90	R\$ 159.445.655,90										
Taxa Interna de Retorno (IRR)	30,2%											
Razão Benefício-Custo (BCR)	2,00											

Valor Actual Neto (VAN)
Tasa Interna de Retorno (TIR)
Análisis Costo Beneficio (ACB)

TASA DE ACTUALIZACION		10%				
AÑO	beneficios o ingresos perdidas evitadas	COSTOS	FLUJOS DE EFECTIVOS	TASA (1+I)-N	perdidas evitadas a precio de hoy	inversion requeridas a precio de hoy
0	-	5.099.138	(5.099.138)	1,00	-	5.099.138
1	927.756	5.794.198	(4.866.443)	0,91	843.414	5.267.453
2	2.552.403	6.018.180	(3.465.777)	0,83	2.109.424	4.973.702
3	4.603.398	6.297.237	(1.693.839)	0,75	3.458.601	4.731.207
4	6.916.585	6.492.662	423.923	0,68	4.724.121	4.434.576
5	9.085.498	6.743.860	2.341.637	0,62	5.641.379	4.187.407
6	10.924.249	7.051.202	3.873.047	0,56	6.166.454	3.980.220
7	12.481.036	7.276.019	5.205.017	0,51	6.404.745	3.733.748
8	13.607.522	7.557.762	6.049.760	0,47	6.348.010	3.525.752
9	14.346.947	7.898.238	6.448.710	0,42	6.084.506	3.349.624
10	14.912.055	8.154.653	6.757.403	0,39	5.749.243	3.143.972
11	15.231.851	8.470.679	6.761.172	0,35	5.338.671	2.968.921
12	15.367.088	8.848.216	6.518.872	0,32	4.896.428	2.819.314
13	15.510.713	9.142.256	6.368.457	0,29	4.492.901	2.648.186
14	15.552.436	9.496.764	6.055.672	0,26	4.095.443	2.500.795
	152.019.537	110.341.064	41.678.473		66.353.339	57.364.014
			VAN	8.989.324		
			TIR	17,09%		
			B/C	1,16		

Modelo Excel – Actual – Reducción de Prev. al 0,51%

AÑO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Modelo Disminución de Prevalencia estrategia al 0,51%. Tasa de descuento 5%																
Costos Intervencion actual																
Vacunación	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217	13.368.217
Acreditación de veterinarios privados	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000
Costos SVO	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Vigilancia en leche (PAL)	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
Diagnosticos Actuales Todos los motivos	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500	8.797.500
Eliminación de Animales Positivos Actual	7.898.400	7.898.400	7.898.400	7.898.400	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230	5.035.230
Total Intervención Actual	30.202.117	30.202.117	30.202.117	30.202.117	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947	27.338.947
Total Intervención Actual c/descuento	30.202.117	28.763.921	27.394.210	26.089.724	22.491.819	21.420.780	20.400.743	19.429.279	18.504.075	17.622.929	16.783.742	15.984.516	15.223.348	14.498.427	13.808.026	13.150.501
Beneficios																
Abortos evitados	350.114	630.205	854.278	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536	1.033.536
Listros de leche producidos	1.000.434	1.800.781	2.441.059	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281	2.953.281
Mayor producción lactea	1.133.825	2.040.885	2.766.533	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052	3.347.052
Ganancia peso ternero	812.439	1.462.391	1.982.352	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321	2.398.321
Ganacia por bonificación de leche	2.437.500	4.875.000	7.312.500	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000	9.750.000
Mantenimiento de vacas improproductivas evitado	437.444	787.399	1.067.363	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335	1.291.335
Total Beneficios	6.171.756	11.596.662	16.424.086	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525	20.773.525
Total Beneficios c/descuento	6.171.756	11.044.440	14.897.130	17.944.952	17.090.431	16.276.601	15.501.524	14.763.356	14.060.340	13.390.800	12.753.142	12.145.850	11.567.476	11.016.644	10.492.042	9.992.421
Tasa Descuento	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Flujo B-C	-24.030.360	-18.605.455	-13.778.031	-9.428.591	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421	-6.565.421
Flujo B-C con descuento	-24.030.360	-17.719.481	-12.497.080	-8.144.772	-5.401.388	-5.144.179	-4.899.219	-4.665.922	-4.443.736	-4.232.129	-4.030.599	-3.838.666	-3.655.872	-3.481.783	-3.315.984	-3.158.080
VPN	-112.659.251															
RBC	0,649874455															
TIR	#¡DIV/0!															

Mantenernos haciendo lo mismo por 15 años tal vez reduzca un poco la prevalencia

Estrategia del 20%

Los costos totales con una tasa de descuento del 5% en 15 años suman 249.878.705 y los beneficios por erradicar al año 15 son 313.090.031



EL flujo B-C se hace positivo al año 5.



VPN	Sumatoria de Beneficios menos costos	63.211.326
RBC	Productividad de lo invertido	1,253
TIR	Rentabilidad de la inversión	11,74%

		Costos sin Buffer		Costos con Buffer
Costos indirectos en U\$S	Datos 2016	2016	Datos 2017	2017
Costo Control (anlisis y vacunación)				
Movimiento	983.850	5.157.668	771.184	4.042.802
Pruebas en frigorífico	294.289	367.109	246.237	307.167
Refrendación de tambos	434.293	2.276.708	392.503	2.057.631
Prueba de Elisa en leche	3,00	145.059	3,00	145.059
Total costos Control		7.946.543		6.552.659
2.1.2 Investigación				
Sangrado - Predios en investigación (privado)	119.598	477.781	38.759	154.838
Análisis - Predios en investigación (público)		149.192		48.350
Total costos Investigación		626.972		203.188
Linderos				
Sangrado - Predios linderos (privado)	202.213	807.818	200.124	799.473
Análisis - Predios linderos (público)	525.182	252.249	423.837	249.643
Total costos linderos		1.060.068		1.049.116
Focos				
Análisis predios focos	525.182	2.753.178	423.837	2.221.894
Vacunación focos y linderos	358.132	2.040.071	358.132	2.040.071
Total costos focos		4.793.249		4.261.965
TOTAL COSTOS ANALISIS Y VACUNACION		14.426.832		12.066.927
ACREDITACION DE VETERINARIOS (Campo y Laboratorio)	56	6.680	56	6.680
COSTO TOTAL REPOSICIÓN (Leche, carne, fletes)	4.461	3.152.886	2.925	1.954.350
SALARIOS (SVO) E INFRAESTRUCTURA		4.060.009		4.060.009
COSTOS INDIRECTOS		21.646.408		18.087.967

Flujo fondos del Proyecto

(Estrategia Buffer)

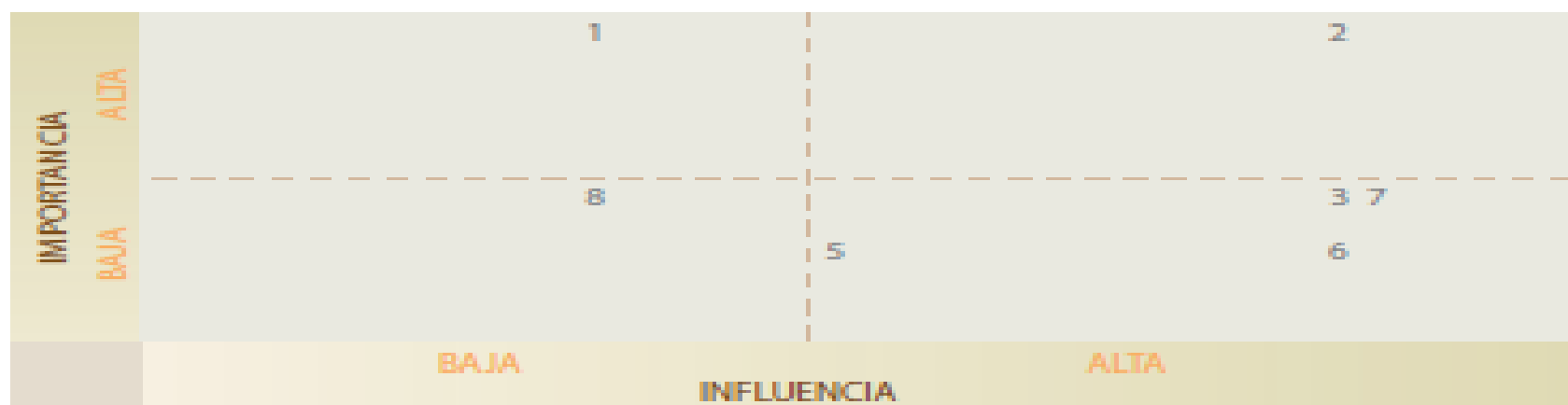
CONCEPTO	2016	2017	Año 2	Año 3	Año 4	Año 5	Año 6	Año 7	Año 8	Año 9	Año 10
Beneficios	0	3.819.524	5.164.315	6.267.800	7.263.929	8.163.436	8.975.984	9.710.269	10.374.117	10.974.572	11.517.973
Costos	22.358.587	18.087.967	16.895.112	15.821.543	14.855.330	13.985.739	13.203.107	12.498.738	11.864.806	11.294.267	10.780.782
Flujos de fondos	-22.358.587	-14.268.443	-11.730.797	-9.553.742	-7.591.401	-5.822.303	-4.227.123	-2.788.469	-1.490.689	-319.695	737.190

Alternativa...

Categoría	Valor Neto	Gobierno	Consumidores	Productores	Industria y Distribuidores
Beneficios					
Incremento en productividad	5,750	750	0	5000	
Incrementos en producción	4,400	400	1000	3000	
Reducción de pérdidas	1,235	0	0	1,000	235
Incremento de exportaciones	2,750	1250	0	500	1,000
Costos					
Personal	(1,450)	(1000)	0	(400)	(50)
Equipos	(825)	(800)	0	(0)	(25)
Vehículos	(925)	(600)	0	(0)	(325)
Entrenamiento	(800)	(500)	0	(0)	(300)
Materiales y Equipos	(1550)	(1000)	0	(0)	(550)
Ingreso perdido	(215)		(200)	(15)	(0)
Beneficio Neto	8,370	(1,500)	800	9085	(15)

Tabla 16. Ejemplo de lista de actores, incluyendo nivel de acción e intereses

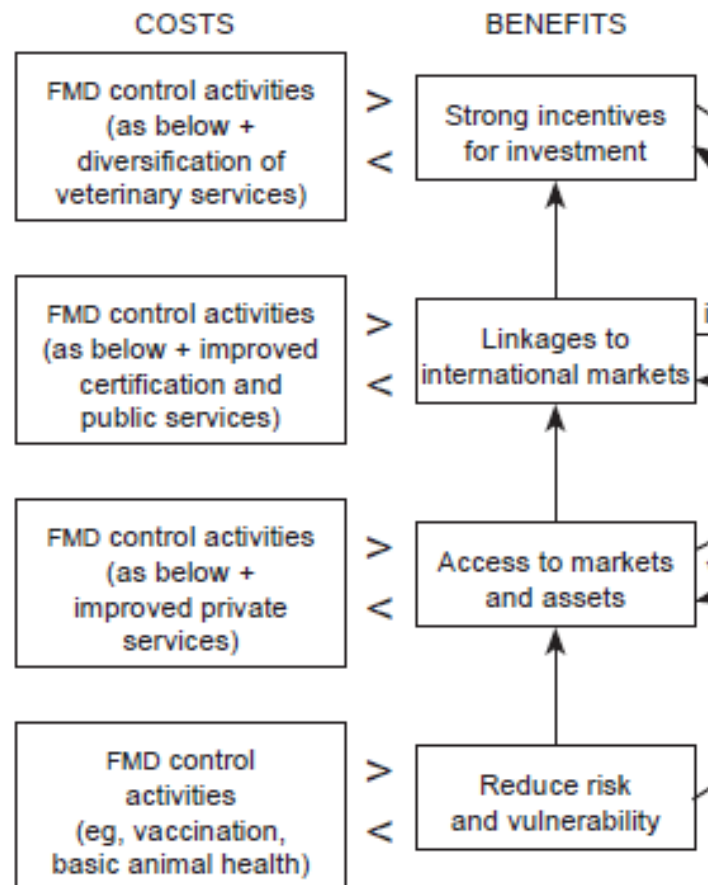
Nivel acción	Identificación	Intereses
Regional	OIE	Velar por el estándar internacional de salud animal
País	Servicio oficial nivel central	Lograr y mantener el estatus sanitario del país
Local	Productor finca	Generar ganancias en su actividad productiva
Local	Proveedor de insumos	Generar ganancias por la venta de sus insumos



Listado de actores: 1. Productor orientado a mercado nacional 2. Productor con potencial exportador. 3. Servicio oficial. 4. Consumidores. 5. Laboratorios y proveedores de servicio privados. 6. Proveedores de vacunas (privados). 7. Gremio productivo. 8. Universidades y centros de investigación.

Figura 24. Matriz de actores por influencia e importancia (ejemplo hipotético: Programa de Erradicación de Fiebre Aftosa basado en Vacunación).

INCENTIVES



Perry y Rich, 2007

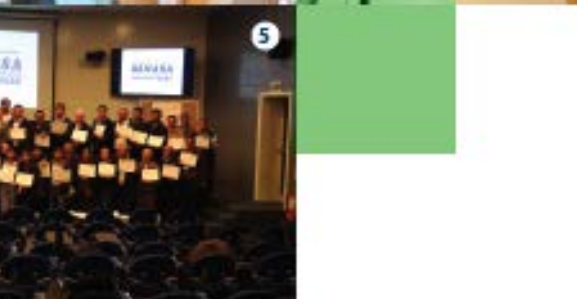
1. Participantes al curso de Economía de Programas de Salud Animal de los países del CVF en Buenos Aires 2016. Foto: CVF

2. Conferencia magistral "Economía of statistics in dairy farms in Colombia, South America" evento inaugural de la Sociedad Internacional de Economía y Ciencias Sociales en Salud Animal (ISESSA), Bogotá 2017. Foto: Cristina Rojo Gimeno

3. Taller Evaluación Económica Programas de Salud Animal - Venezuela (2016). Foto: Yanira Vázquez y Jaime Romero

4. Taller inicial para la elaboración de estudios de evaluación económica de los programas sanitarios oficiales orientados al control de la Brucellosis y Tuberculosis bovina. Foto: Convenio DCA/CVF

5. Curso Economía de Salud Animal - Perú (2016). Foto: Mónica Puernape



1. Participación en la COSALFA (Brasil, 2017). Foto: Centro Panamericano de la Fiebre Aftosa.

2. Curso de Evaluación Económica de Salud Animal (Colombia, 2017). Foto: Angie Gacón y Jaime Romero

3. Economía del sistema de transición chileno (Chile, 2017). Foto: Alejandro Saavedra

4. Taller sobre evaluación económica de programas estratégicos del SENASA (Perú, 2017). Foto: María Pía Méndez

5. Reunión evaluación programas brucellosis y tuberculosis países CVF (Bolivia, 2017). Foto: DCA, CVF



Objectives



Figura 8. Características fundamentales de un objetivo

AHP design

- Prerrequisitos de operación de las medidas y la estrategia en conjunto
- Interacción de las medidas generales y específicas (complementariedad).
- Descripción y sincronización de medidas en la cadena en función de riesgo
- Descripción de los componentes clave de las medidas (fuentes de costo).
- Efecto positivo de la estrategia (pérdidas evitadas).
- Definición de roles, beneficiarios y potenciales ganadores o perdedores
- Diseño del sistema de provisión de servicios.

Global Burden of Animal Diseases

*Brasil
August 2018*

CHALLENGES

- Economic impact
- Public and private roles
- Efficiency of AHP
- Health management
- Benefit oriented
- Country asset . Private-public-private
- International public good

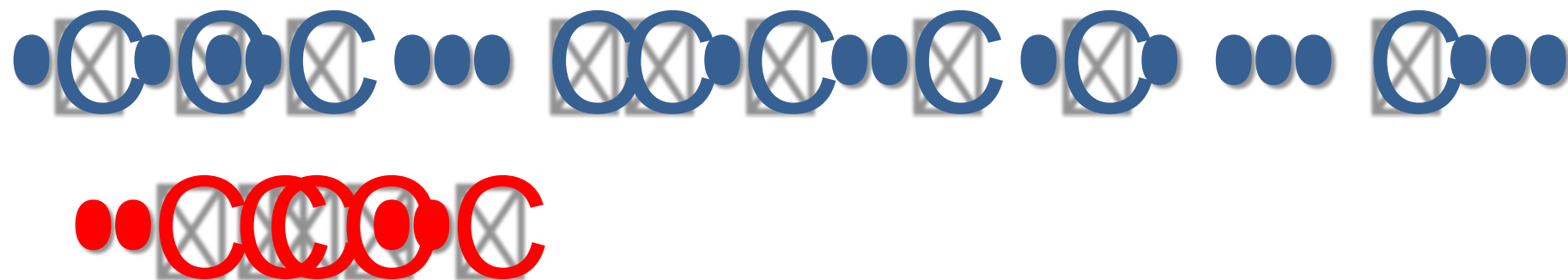


AHP

The intervention aims to change or sustain health status.

It is successful if:

- Technically feasible
- Economically sustainable
- Social, environmental and political acceptable



DECISIONS follow beliefs and perceptions about **disease impact** and **effectiveness** of interventions within a context.

DECISION MAKING COGNITIVE PROCESS

- Intuitive mode (System1).

Kahneman – Nobel P (2002)
Heuristics of judgment

- Reasoning mode – (System 2)
Rational – Economics and probability
Rational expectations

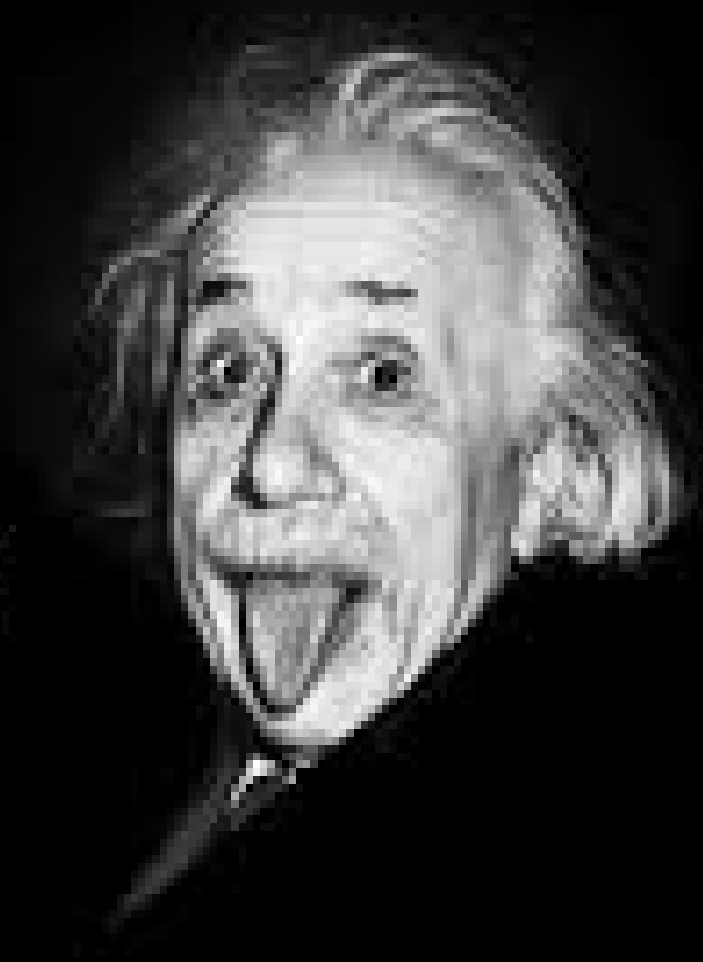


<http://tecnicasdedecisionyprocesos.wordpress.com/>

The **CHALLENGE** is supporting,
influencing and accompanying
the decision making process.

"Insanity is doing the
same thing over and
over again and expecting
different results"

Albert Einstein



A herd of elephants is walking across a savanna landscape during sunset. The sun is low on the horizon, casting a warm, golden glow over the scene. The elephants are in the foreground, moving towards the right. The background shows a vast, open plain with some distant hills.

**If you want to go fast, go alone.
If you want to go far, go together.**

African Proverb

<http://www.ica.org>

<http://openinnovationtraining.blogspot.com/2013/05/si-quieres-ir-rapido-ve-solo-si-quiere.html>



Acknowledgements

- Dr. Luis Barcos - OIE
- Dra. Nathaly Monsalve - OIE
- Dr François Caya – OIE
- Dr. Hernán Rojas – CERES-BCA
- Servicios Veterinarios of LAC



Resultados, nuestro compromiso



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