As Dimensões Humanas das Mudanças Ambientais e a Agenda Científica

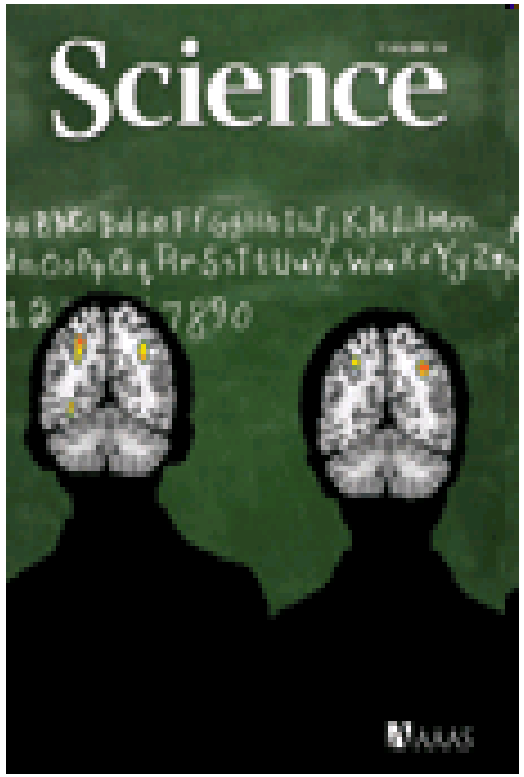
Myanna Lahsen,PhD

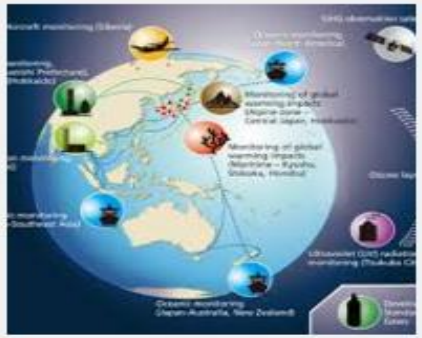
Pesquisadora Titular

Centro de Ciencia do Sistema Terrestre, INPE

“Earth System Research Priorities”
Reid, Bréchignac & Lee, *Science* 17/8 2009, 325. no. 5938, p. 245

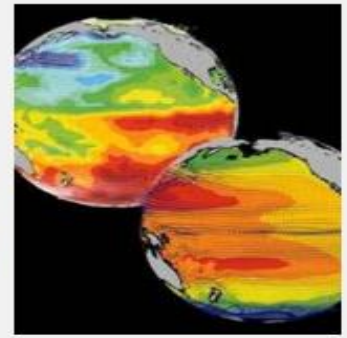
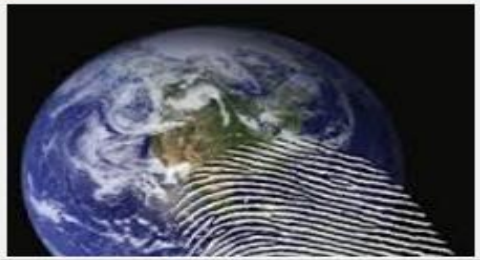
“As ciências naturais não deverão mais dominar a agênda de pesquisas do sistema terrestre; as ciências sociais serão, no minimo, de importância igual a elas em sua proxima fase.”



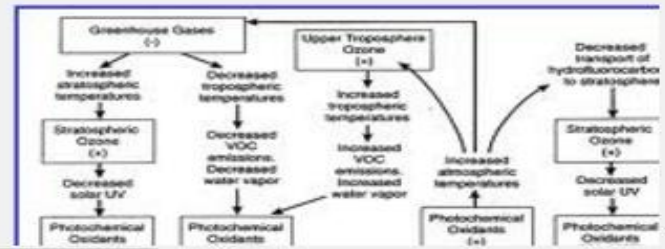




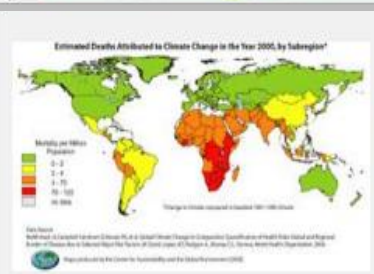
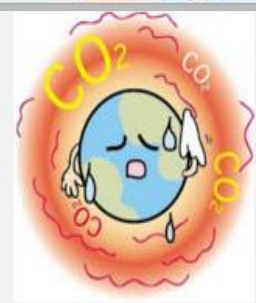
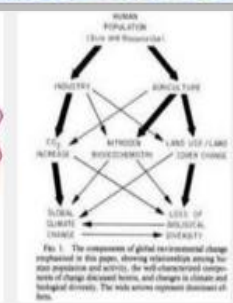
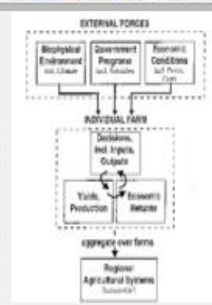


IHOP
UPDATE
Human Health
and Global
Environmental
Change


Greenhouse Gases
Upper Tropospheric Ozone
Increased stratospheric temperatures
Decreased tropospheric temperatures
Increased tropospheric temperatures
Decreased transport of hydrofluorocarbons to stratosphere
Stratospheric Ozone
Decreased VOC emissions, Decreased water vapor
Increased VOC emissions, Increased water vapor
Increased atmospheric temperatures
Decreased solar UV
Photochemical Oxidants

CLIMATE CHANGE

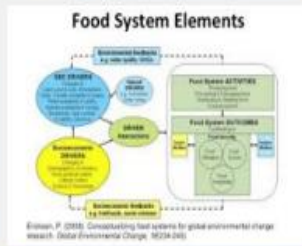


CO2
CO2
CO2


EXTERNAL FORCES
Biological Environment
Government Programs
Economic Conditions
INDIVIDUAL FARM
Decisions, Incl. Inputs, Outputs
Yields, Production
Economic Returns
aggregate over farms
Regional Agricultural Systems

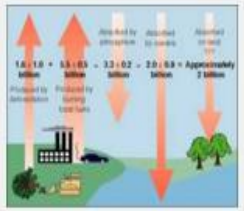

Our Changing Planet
AN INTRODUCTION TO EARTH SYSTEM SCIENCE AND GLOBAL ENVIRONMENTAL CHANGE



Geomorphology and Global Environmental Change


Global Environmental Change
Human and Policy Dimensions


Food System Elements

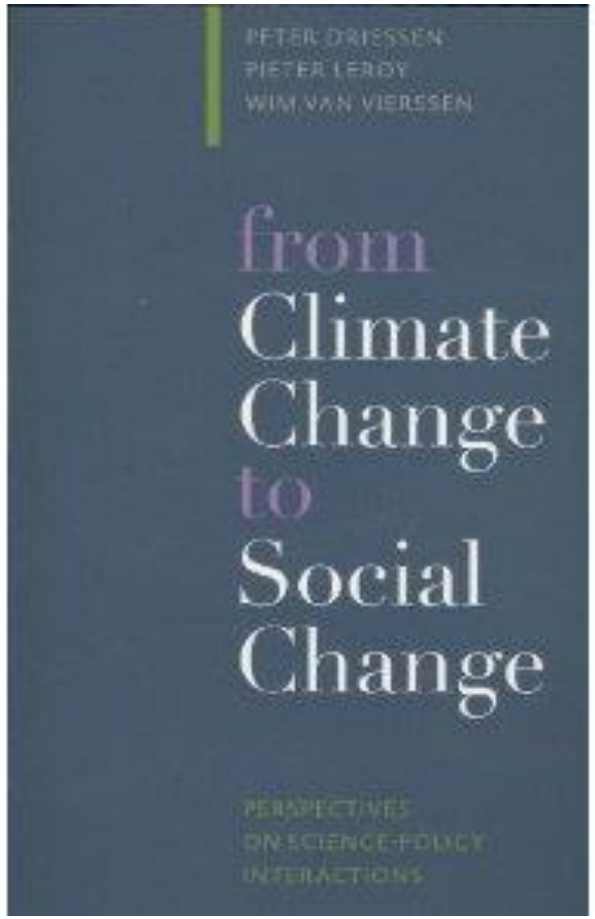
Temperature Rises
Rainfall decreases
Drought and wildfires increase
Fewer trees transpire less water vapor into the air
Trees die, decompose, or burn releasing Co2







Knowledge → Action

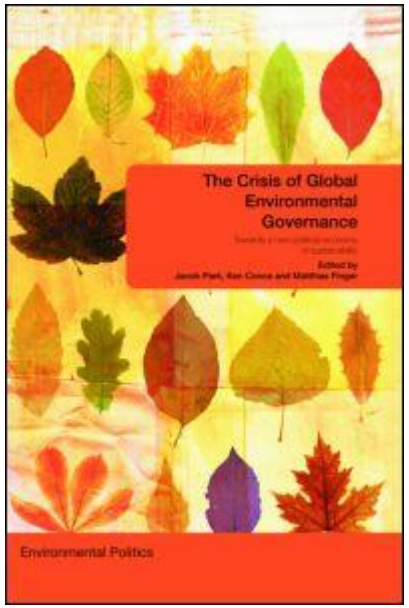




- “The interaction between science and politics is anything but a purely managerial question … ” (pp. 168, 170)

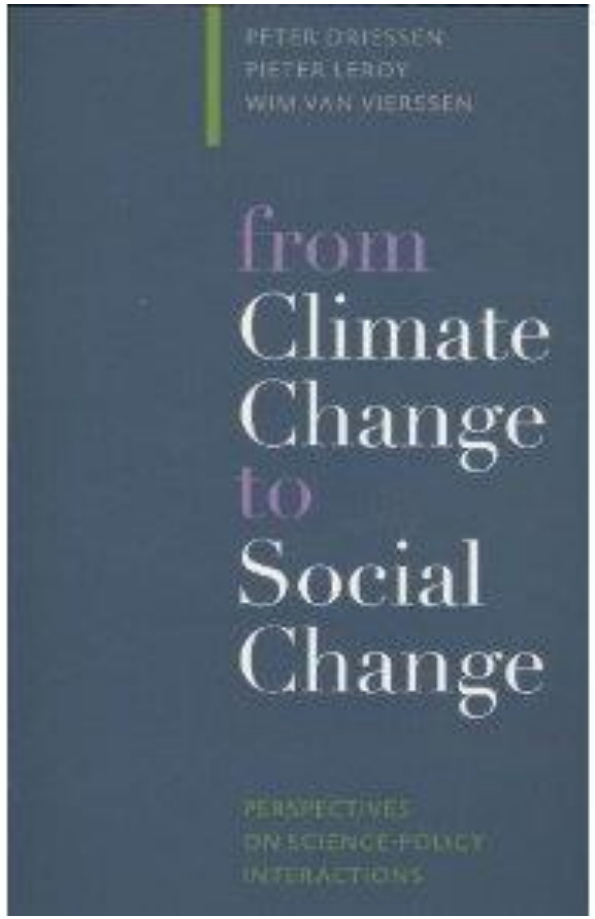
The Crisis of Global Environmental Governance

ed. J. Park, K. Conca, M. Finger (2008)



- "Approaching the world's environmental challenges as a question of technical knowledge, to be filtered through existing institutional government arrangements, is very much part of the problem"

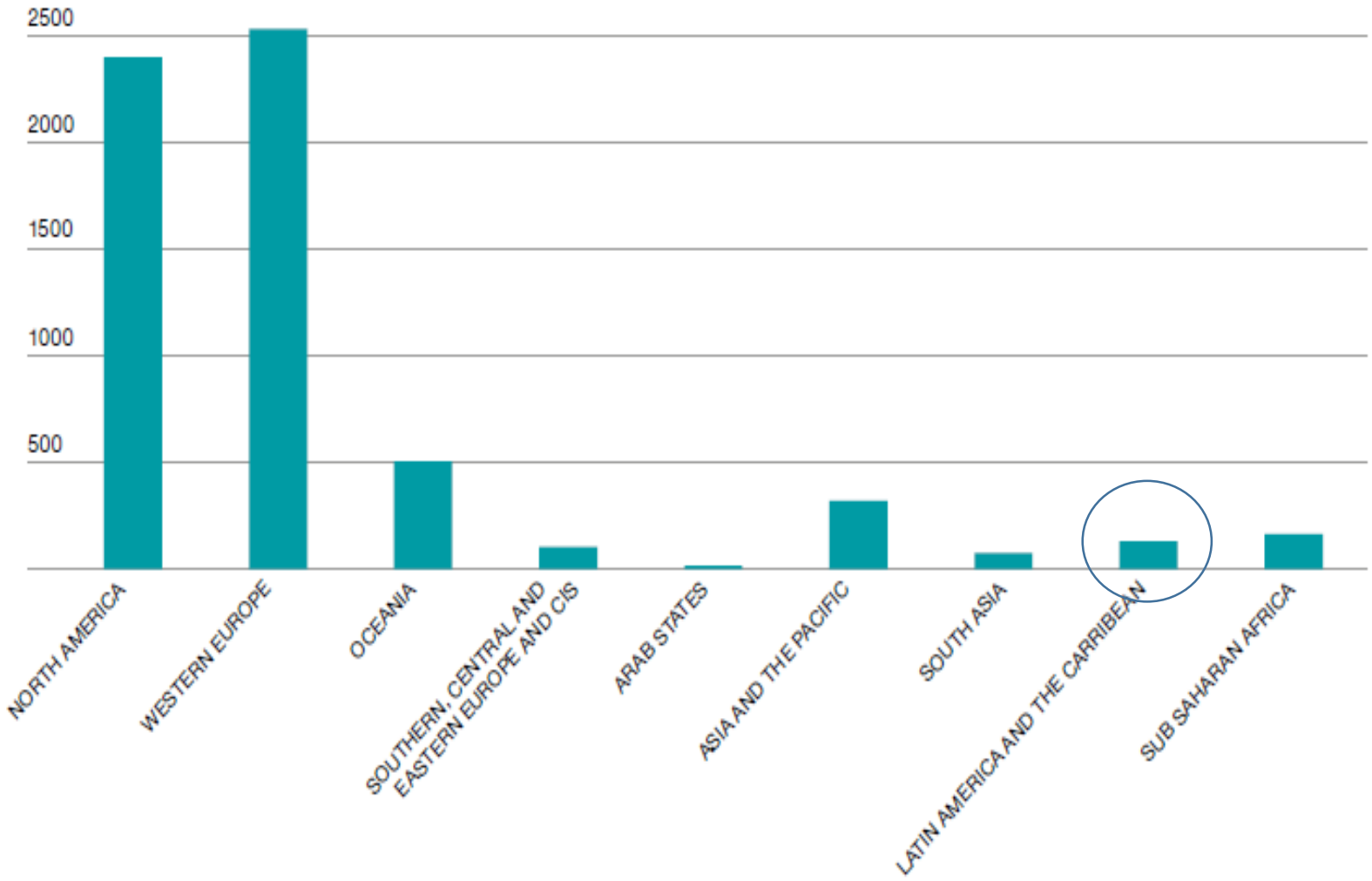
that goes for science too…



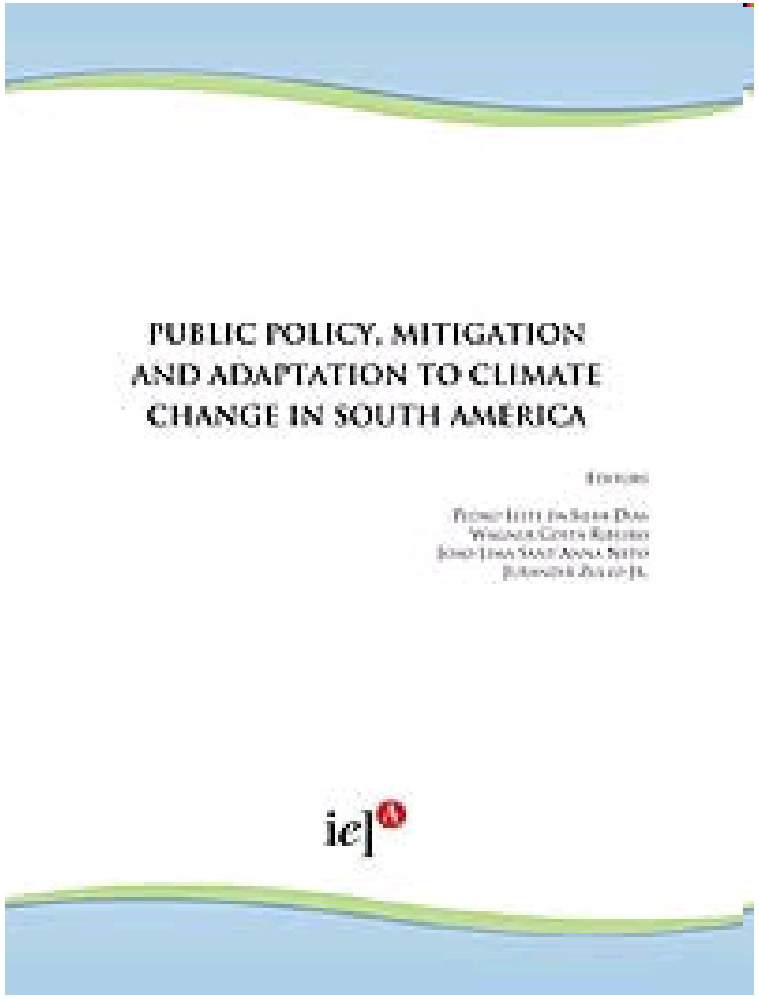
- "For climate change to be able to lead to social change, there would have to be a drastic overhaul of science, of politics, and of the interactions between them…'' (pp. 168)

FIGURE 3

Number of articles in SSCI database in the period 2000-2010 with keywords: "environmental change" or "climate change"



Source: ISSC. *Transformative Cornerstones of Social Science Research for Global Change*, p. 11



List of authors/areas/institutions:

8 - Geography

7 - COPPE

4 - INPE

3 - Economics

2 - Mechanical engineering

2 - Oceanography

1 - Cetesp

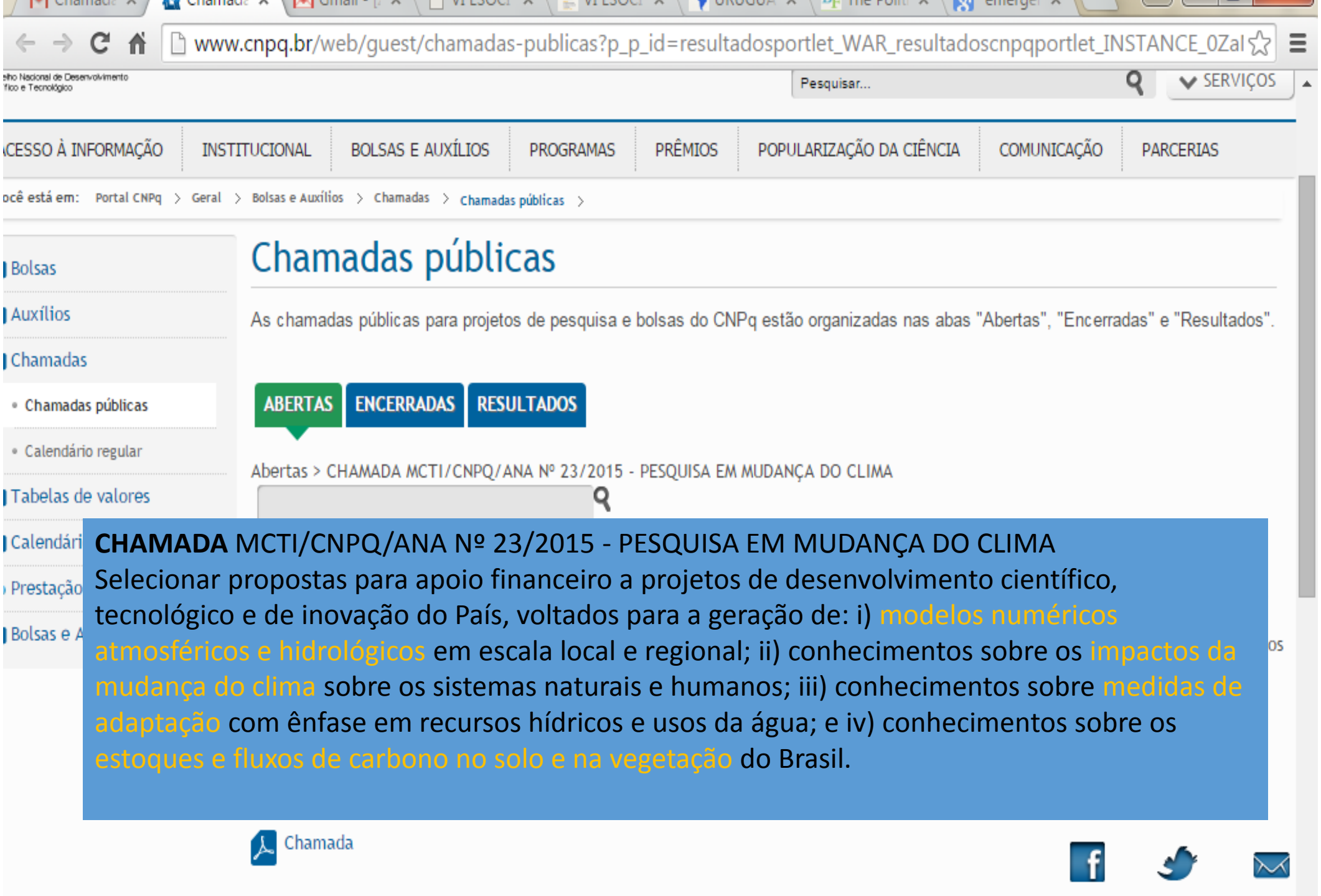
1 - International Relations

2009 Report launched by the Institute of Advanced Studies, USP

Conferencistas INCT 2016
Cientistas Sociais Brasileiros
menos economistas



Christovam Barcellos (FIOCRUZ)


www.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_0ZaI
Pesquisar...
SERVIÇOS
ACESSO À INFORMAÇÃO
INSTITUCIONAL
BOLSAS E AUXÍLIOS
PROGRAMAS
PRÊMIOS
POPULARIZAÇÃO DA CIÊNCIA
COMUNICAÇÃO
PARCERIAS
Você está em: Portal CNPq > Geral > Bolsas e Auxílios > Chamadas > Chamadas públicas >
Bolsas
Auxílios
Chamadas
Chamadas públicas
Calendário regular
Tabelas de valores
Chamadas públicas
As chamadas públicas para projetos de pesquisa e bolsas do CNPq estão organizadas nas abas "Abertas", "Encerradas" e "Resultados".
ABERTAS
ENCERRADAS
RESULTADOS
Abertas > CHAMADA MCTI/CNPQ/ANA Nº 23/2015 - PESQUISA EM MUDANÇA DO CLIMA
CHAMADA MCTI/CNPQ/ANA Nº 23/2015 - PESQUISA EM MUDANÇA DO CLIMA
Selecionar propostas para apoio financeiro a projetos de desenvolvimento científico, tecnológico e de inovação do País, voltados para a geração de: i) modelos numéricos atmosféricos e hidrológicos em escala local e regional; ii) conhecimentos sobre os impactos da mudança do clima sobre os sistemas naturais e humanos; iii) conhecimentos sobre medidas de adaptação com ênfase em recursos hídricos e usos da água; e iv) conhecimentos sobre os estoques e fluxos de carbono no solo e na vegetação do Brasil.
Chamada

www.cienciasemfronteiras.gov.br/web/csf/areas-contempladas

CIÊNCIA SEM FRONTEIRAS

Pesquisar...

Início • O programa • Inscrições e Resultados • Países e Parceiros • Bolsistas e Investimentos • Empresas • Dúvidas frequentes

Você está em: Portal CSF > O programa > Áreas Contempladas

O programa

- Objetivos
- Metas
- **Áreas Contempladas**
- Instituições de destino
- Modalidade de bolsas no exterior
- Modalidade de bolsas no país
- Coordenadores Institucionais
- Valores de Auxílios e Bolsas
- Documentos

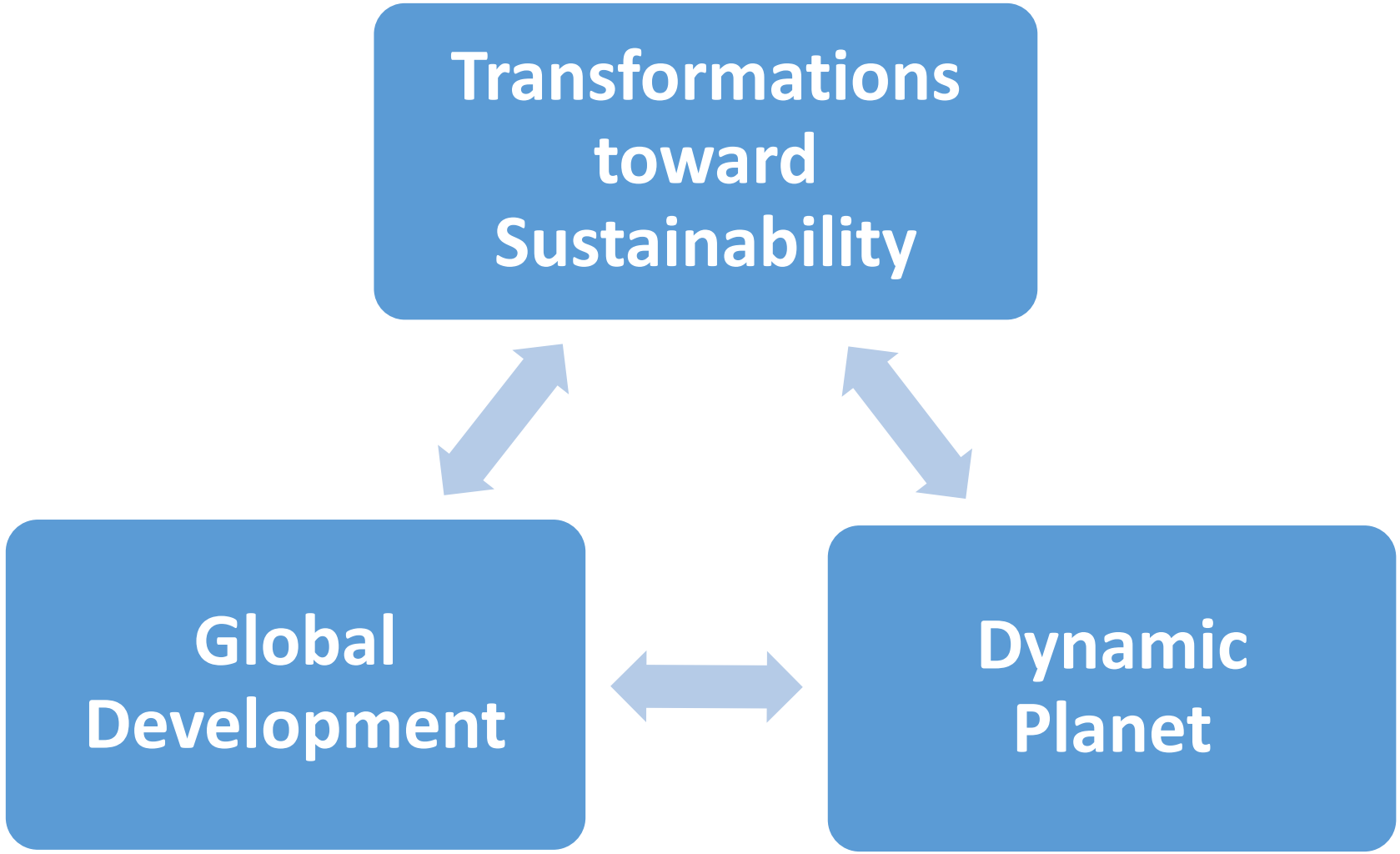
Áreas Contempladas

No Programa Ciência sem Fronteiras, as áreas contempladas são:

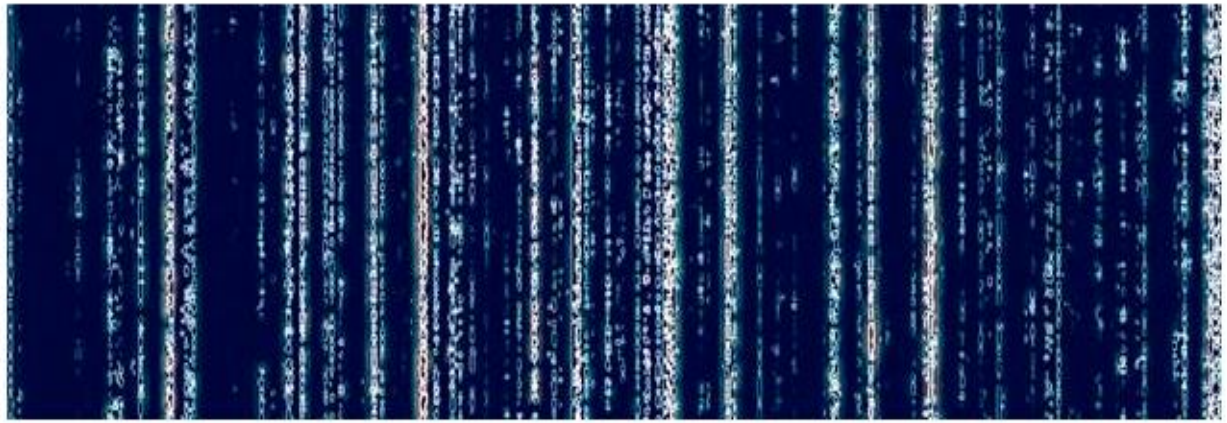
- Engenharias e demais áreas tecnológicas;
- Ciências Exatas e da Terra;
- Biologia, Ciências Biomédicas e da Saúde;
- Computação e Tecnologias da Informação;
- Tecnologia Aeroespacial;
- Fármacos;
- Produção Agrícola Sustentável;
- Petróleo, Gás e Carvão Mineral;
- Energias Renováveis;
- Tecnologia Mineral;
- Biotecnologia;
- Nanotecnologia e Novos Materiais;
- Tecnologias de Prevenção e Mitigação de Desastres Naturais;
- Biodiversidade e Bioprospecção;
- Ciências do Mar;
- Indústria Criativa (voltada a produtos e processos para desenvolvimento tecnológico e inovação);
- Novas Tecnologias de Engenharia Construtiva;
- Formação de Tecnólogos.

"Objetivos:
Investir na formação de pessoal altamente qualificado nas competências e habilidades necessárias para o avanço da sociedade do conhecimento; ..."

Future Earth Research Themes



Transformative Research: Interactions Between Social Sciences, Humanities and Environmental Science



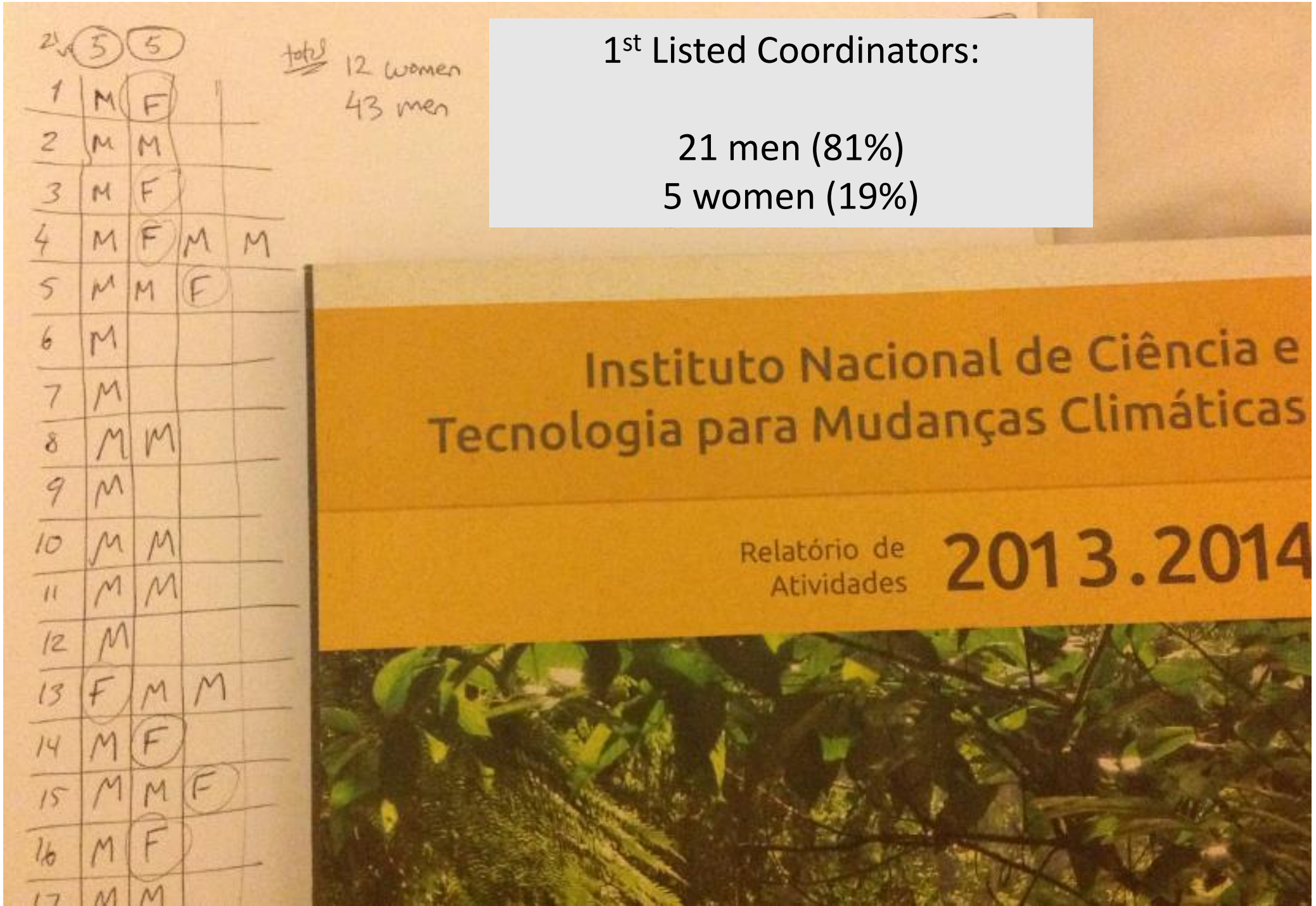
The São Paulo Research Foundation, FAPESP, and the Transatlantic Platform for the Social Sciences and Humanities (TA-P) invite you to the Workshop:

TRANSFORMATIVE RESEARCH: INTERACTIONS BETWEEN SOCIAL SCIENCES, HUMANITIES AND ENVIRONMENTAL SCIENCE

Eventos

Localização da FAPESP e hotéis próximos / Venue and nearby hotels

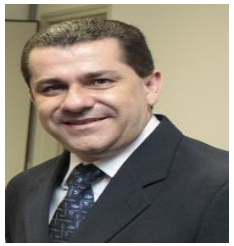
Transformative Research - Expert Biographies



1st Listed Coordinators:

21 men (81%)
5 women (19%)

Conferencistas Brasileir*s INCT 2016



Tercio Ambrizzi (USP)



Plínio Alvalá (INPE)



Carlos Garcia (FURG)



Jean Ometto (INPE)



Carlos Nobre (INPE)



Luiz Rosa (UFRJ)



Ênio Pereira (INPE)



Christovam Barcellos(FIOCRUZ)



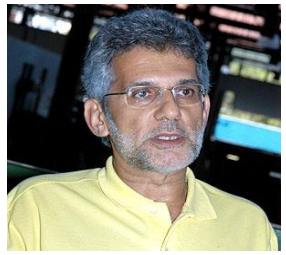
Regina Alvalá (Cemaden)



José Tundisi (IIE)



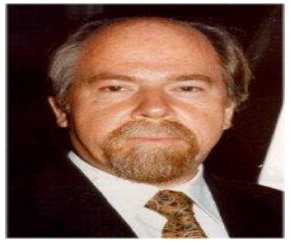
Alfredo Neto (UFPE)



Antonio Buainain (Unicamp)



Eduardo Assad (Embrapa)



Jacques Marcovitch (USP)



Paulo Moutinho (IPAM)



Paulo Nobre (INPE)



José Marengo (INPE)

Integrantes do Alto Escalão do Governo Temer



Eliseu Padilha
Casa Civil da Presidência da República



Alexandre Moraes
Ministério da Justiça e Cidadania



Raul Jungmann
Ministério da Defesa



Blairo Maggi
Ministério da Agricultura, Pecuária e Abastecimento



José Serra
Ministério das Relações Exteriores



Henrique Meirelles
Ministério da Fazenda



Maurício Quintella
Ministério dos Transportes, Portos e Aviação Civil



Marcelo Calero
Ministério da Cultura



Ronaldo Nogueira
Ministério do Trabalho



Osmar Terra
Ministério do Desenvolvimento Social e Agrário



Ricardo Barros
Ministério da Saúde



Mendonça Filho
Ministério da Educação



Grace Mendonça
Advogada-Geral da União

Pre-scoping questionnaire: IPCC special report on the impacts of global warming of 1.5°C above preindustrial levels and related global greenhouse gas emission pathways, in the context of sustainable development and efforts to eradicate poverty – July 2016

1. In your vision, which are the main, relevant elements that could be addressed in the Special Report? *(clear and specific topics/questions, maximum 600 characters)*

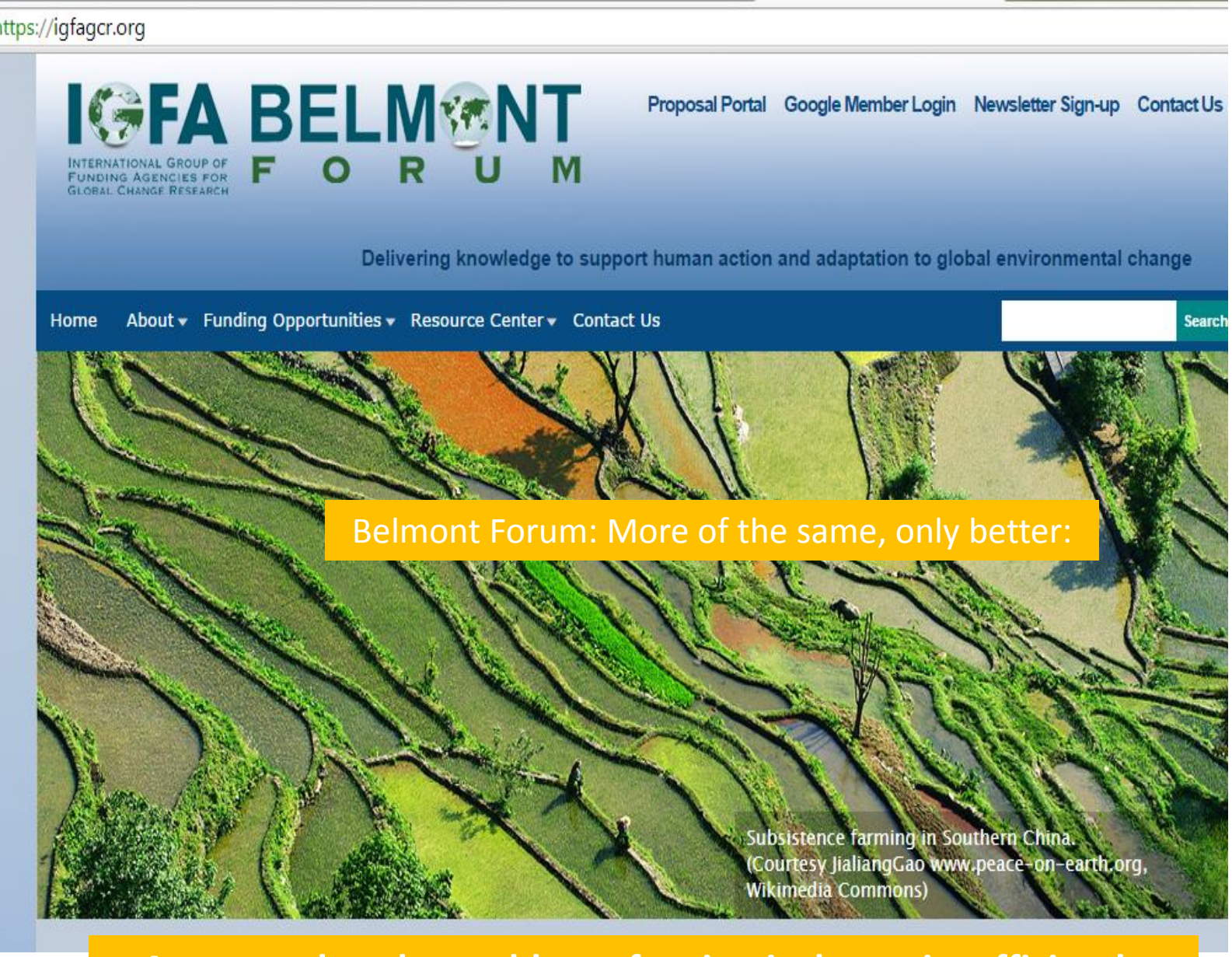
Identify the knowledge that exists and might be developed which can help better focus on and overcome the real obstacles to action on already existent knowledge. The forecasts have been in place for a long time. The focus now needs to be on why they have not been heeded and what lines of action are most likely to help overcome the resistances. It would be tragic to do more of the same. What is missing is not more detailed knowledge of the biogeophysical effects, it is how to act on the basis of what already is known.

7. Which field of expertise or sector do you represent?
Please select:

Physical climate science		Agriculture and food security	✓	Water	✓
Health		Urban		Coastal	
Infrastructure		Economic		Technology	
Engineering		Energy		Health	
Natural resources	✓	Conservation			

Other *(please specify, maximum 60 characters)*

Wow. NO slot for research on politics, social systems!!!!



Assumes that the problem of action is due to insufficiently integrative Earth system model predictions

- "… requires a profound change to the way we support and undertake global environmental change research. … research must urgently be coordinated… [to produce]… Earth System Analysis and a Prediction System, …[an] environmental decision-support system."

Source: ***White Paper representing the "funders' vision" of needed directions of GEC research.***

https://www.igfagcr.org/belmont-challenge

Resistances

- Suggestions:
  - Broadening the focus from climate to **Sustainability**
  - A *relative* **demotion of prediction**
  - An intensified focus on **institutions** (neoliberal capitalism as part of the problem)

Article

Science, Technology, & Human Values
1-24
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DOI: 10.1177/0162243916639728
sthv.sagepub.com
SAGE

Toward a Sustainable Future Earth: Challenges for a Research Agenda

Myanna Lahsen[1]

Abstract

Future Earth is an evolving international research program and platform for engagement aiming to support transitions toward sustainability. This article discusses processes that led to *Future Earth*, highlighting its intellectual emergence. I describe how *Future Earth* has increased space for contributions from the social sciences and humanities despite powerful, long-standing preferences for bio-geophysical research in global environmental research communities. I argue that such preferences nevertheless are deeply embedded in scientific institutions that continue to shape environmental science agendas. As such they constitute a formidable obstacle that needs to be recognized and countered to bolster efforts at effective societal transformation in the face of sustainability challenges. The analysis draws on two decades of observant participation in environmental science communities in the United States, Europe, Brazil, and elsewhere, including participation in the visioning process that led to *Future Earth*.

- “Of course, we need more research and technical innovation. But there is no purely technical solution for climate change. For public policy to be grounded in the hard-won results of climate science, we must now turn our attention to the dynamics of social and political change.”

Sterman. *Risk communication on climate change.*

Science 322, 24 October 2008.

Changing the Atmosphere

Anthropology and Climate Change

Fiske, S.J., Crate, S.A., Crumley, C.L., Galvin, K., Lazrus, H., Lucero, L. Oliver-Smith, A., Orlove, B., Strauss, S., Wilk, R. 2014.
Final **report of the AAA Global Climate Change Task Force**
American Anthropological Association.

Section 4: Adaptation, Vulnerability and Resilience in Climate Change:

"Existing top-down programs do not treat the social and economic variables that underpin vulnerability to climate change—poverty, marginalization, lack of education and information, and loss of control over resources."

Author's personal copy

Available online at www.sciencedirect.com
ScienceDirect
Current Opinion in Environmental Sustainability
ELSEVIER

Impacts, adaptation and vulnerability to global environmental change: challenges and pathways for an action-oriented research agenda for middle-income and low-income countries

Myanna Lahsen[1], Roberto Sanchez-Rodriguez[2], Patricia Romero Lankao[3], Pauline Dube[4], Rik Leemans[5], Owen Gaffney[6], Monirul Mirza[7,8], Patricia Pinho[1,6], Balgis Osman-Elasha[9] and Mark Stafford Smith[10]

The socio-economic impacts of environmental stresses associated with global environmental change depend to a large extent on how societies organize themselves. Research on climate-related societal impacts, vulnerability and adaptation is currently underdeveloped, prompting international global environmental change research institutions to hold a series of meetings in 2009–2010. One of these aimed at identifying needs in middle-income and low-income countries (MLICs), and found that effective responses to the challenge of reducing vulnerability and enhancing adaptation will drive research and policy into challenging and innovative areas of research. Producing impacts, vulnerability and adaptation knowledge requires greater inclusion of MLIC researchers and a rethinking of the research structures, institutions and paradigms that have dominated global change research to date. Scientific literature discussed in this article suggests that governance issues need to become central objects of empirically based, detailed, multiscalar and action-oriented research, and that this needs to address the politically sensitive and seemingly intractable issue of reducing global inequities in power and resource distribution. The scientific literature suggests that without effective action in those directions, current trends toward greater inequality will continue to both reflect and intensify global environmental threats and their impacts.

Current Opinion in Environmental Sustainability 2010, 2:364–374

This review comes from the Open issue
Edited by Rik Leemans and Anand Patwardhan

Received 23 July 2010; Accepted 25 October 2010

1877-3435/$ – see front matter
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DOI 10.1016/j.cosust.2010.10.009

Introduction

It sounds like a paradox: 'catastrophic and irreversible damage to natural systems from climate change need not result in catastrophic and irreversible damage to humans... [even though] ...catastrophic and irreversible damage to humans can result even from modest changes in natural systems' ([1••], p. 89). The critical factor is how societies develop and organize themselves – whether they do so in ways that render them vulnerable or resilient to current and future environmental stresses caused by global climate change in interaction with other environmental, political and economic trends, both global and local [2].

"...needs to address the politically sensitive and seemingly intractable issue of reducing global inequities in power and resource distribution. The scientific literature suggests that without effective action in those directions [will] intensify global environmental threats and their impacts."

- “Critical analysis of institutions and values are almost always subversive”

  Roy Rappaport, “The Anthropology of Trouble” (1992)

Carne, Ciencia e Midias no Brasil

compon.org

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COMPON Comparing Climate Change Policy Networks

Home

The COMPON Project: An Introduction

~20 country studies intercomparison

National newspaper coverage

Policy debates

Actor networks

survey of major institutional actors

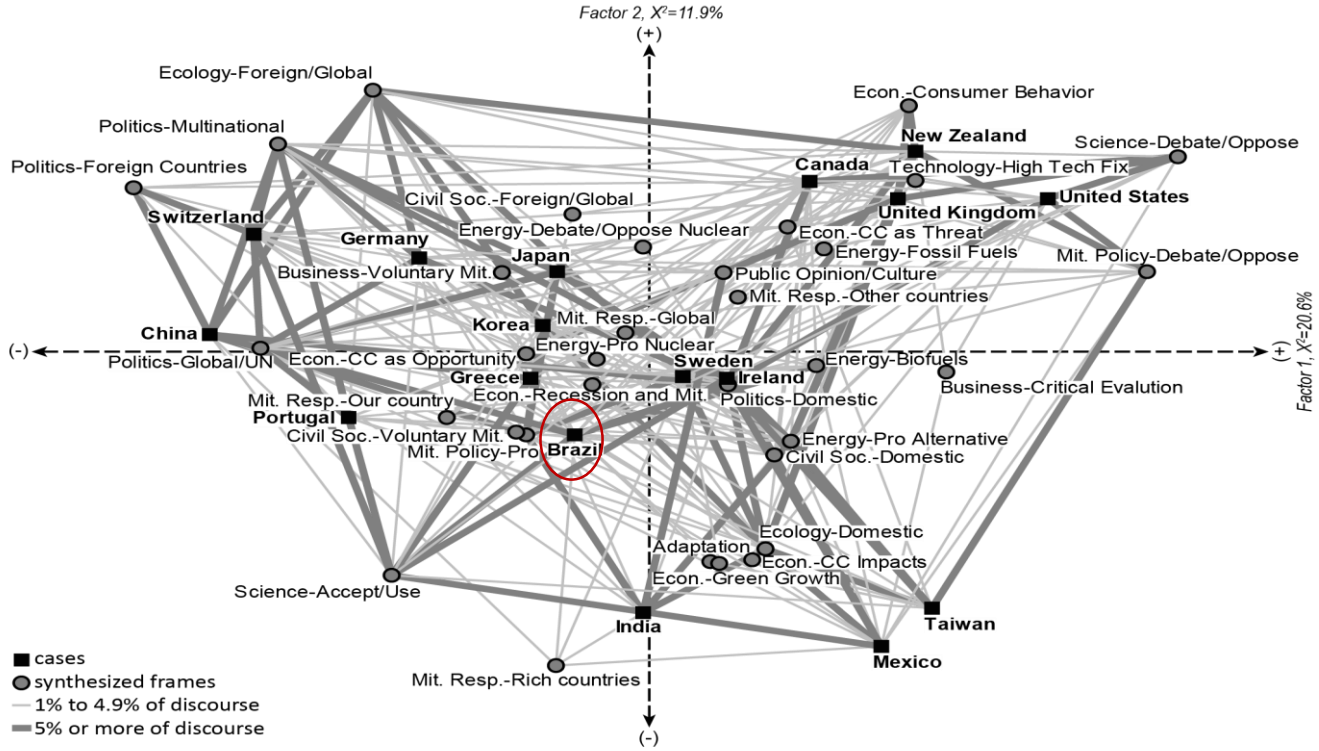


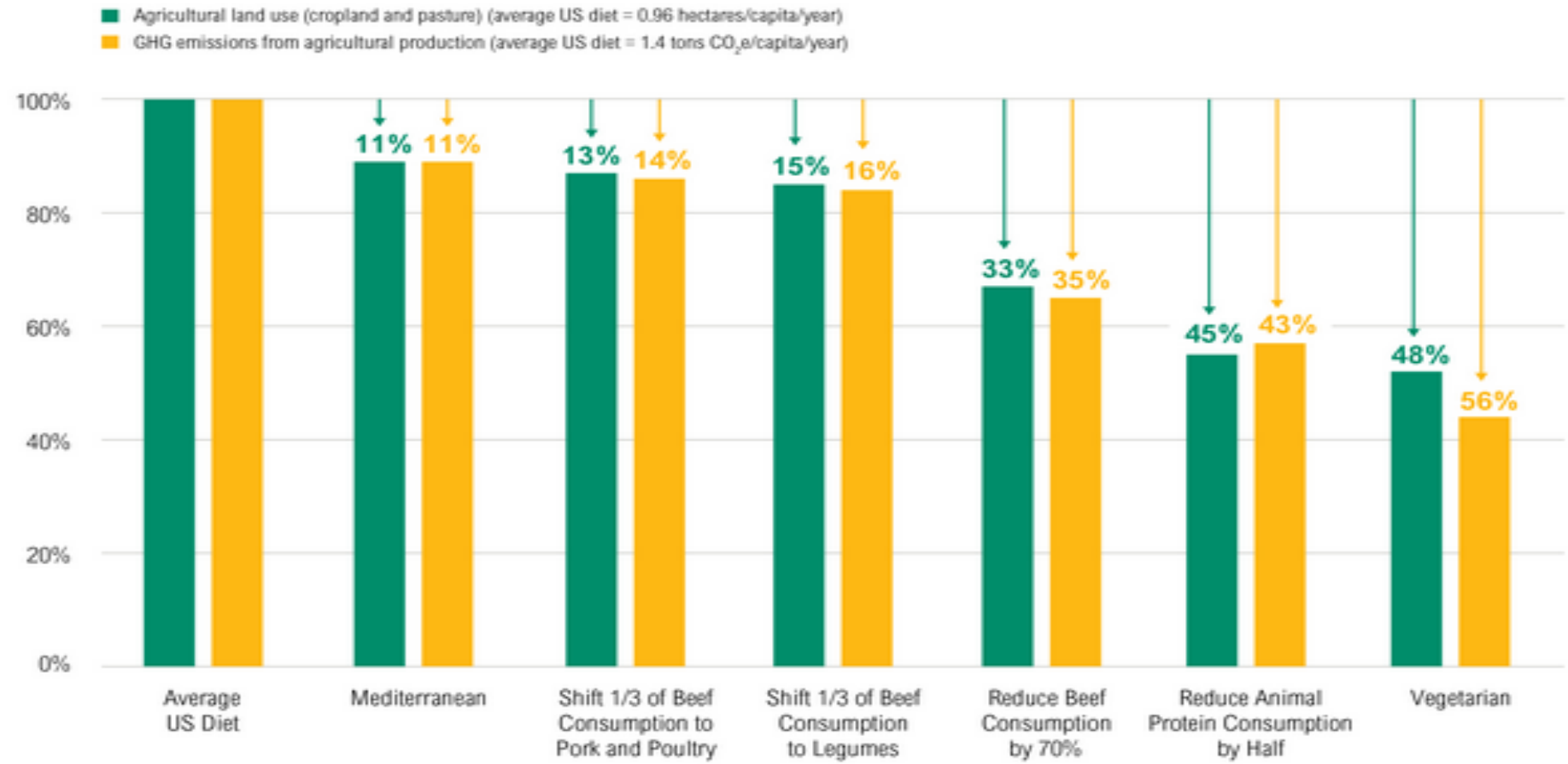
Figure 1 | Global Field of Media Discourse.

- “a emergencia social e representada pela picanha, o corte bovino tido como o mais nobre nos churrascos …” (p.69)



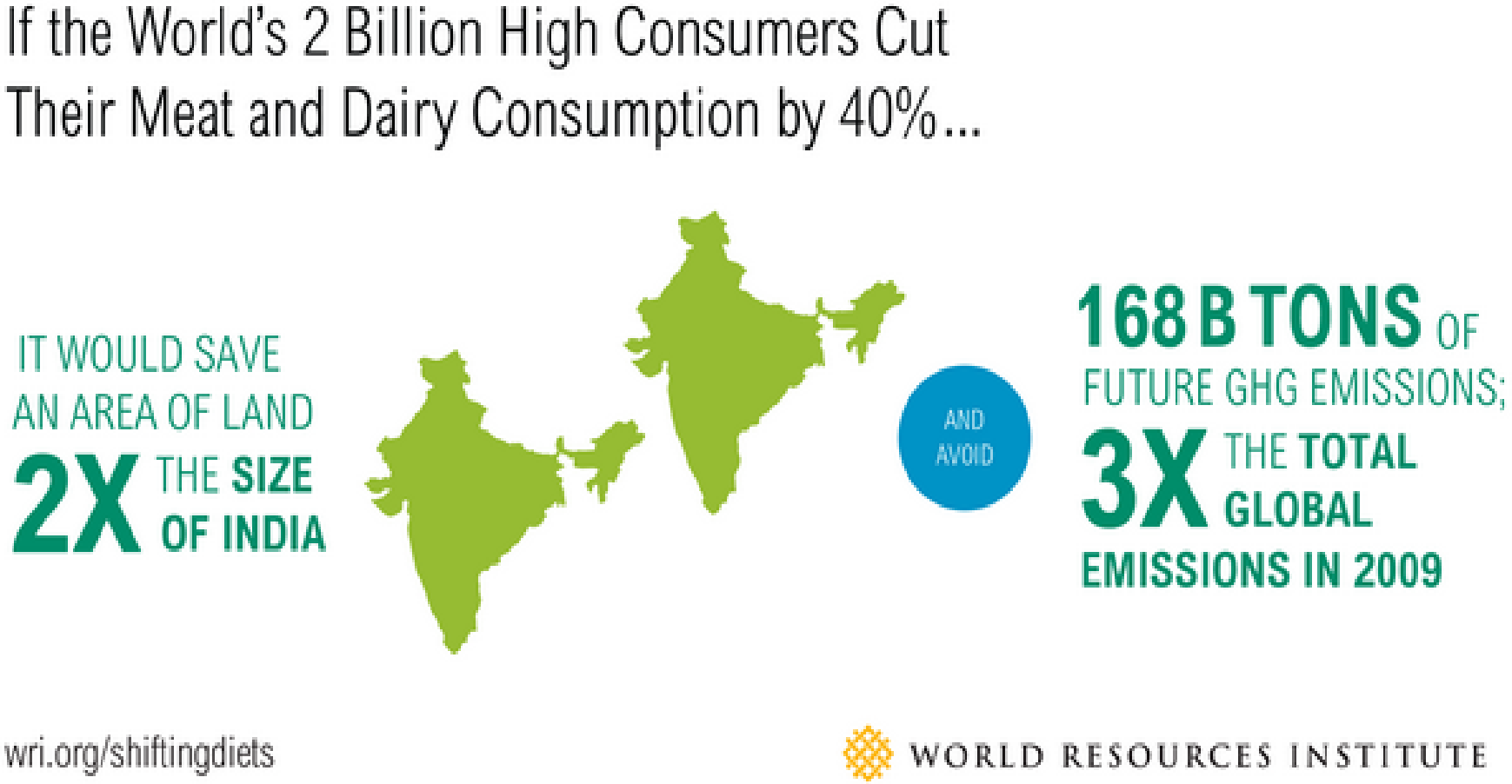
- “we quantify the potential for demand-side mitigation options, and show that **improved diets [reducing beef consumption]** … [is] **essential** to deliver **emissions reductions**, and to provide global **food security** in 2050”
    - Bajželj, Bojana, et al. "Importance of food-demand management for climate mitigation." *Nature Climate Change* 4.10 (2014): 924-929.

Shifting High Consumers' Diets Can Greatly Reduce Per Person Land Use and GHG Emissions



wri.org/shiftingdiets

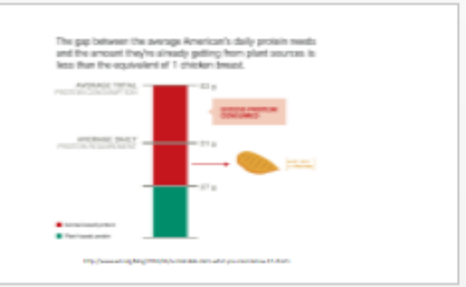
WORLD RESOURCES INSTITUTE



"reducing consumption of animal-based foods among the world's wealthier populations could free up significant amounts of land—possibly enabling the world to **feed 10 billion people by 2050 without agriculture further expanding into forests**."



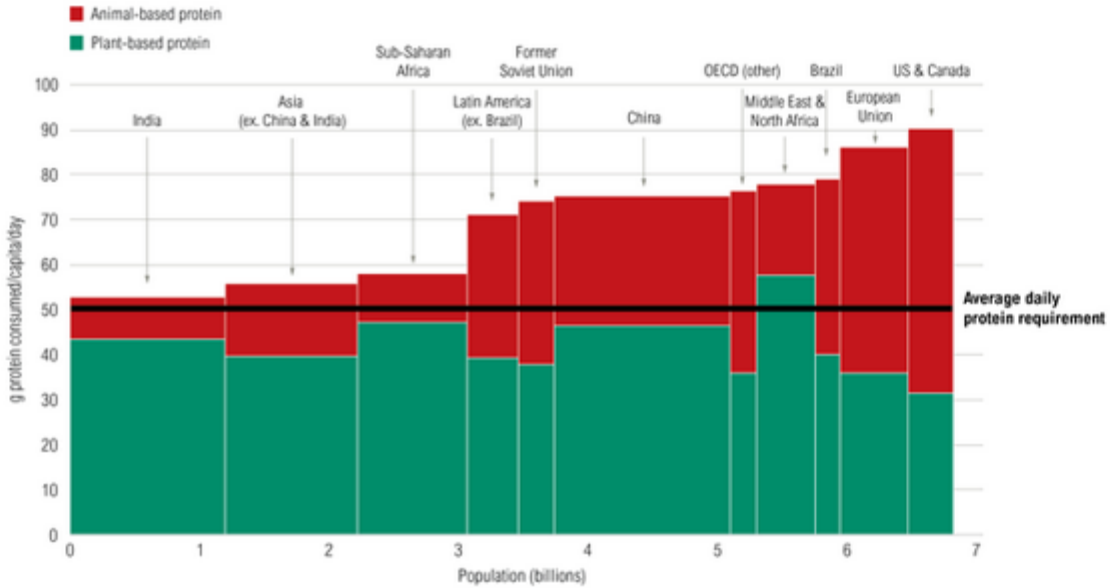








People Are Eating More Protein than They Need—Especially in Wealthy Regions



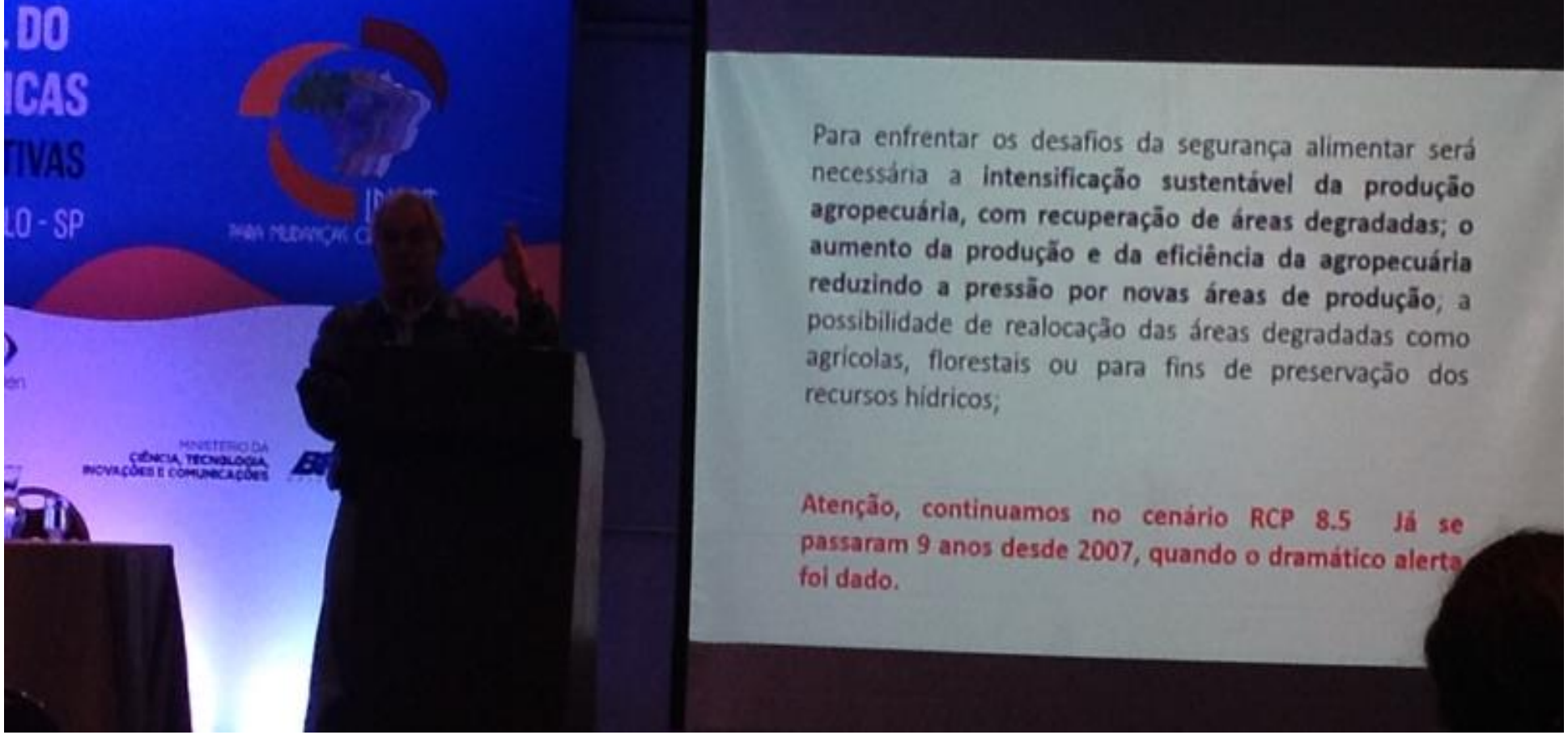
wri.org/shiftingdiets

WORLD RESOURCES INSTITUTE

"Global average per person protein consumption exceeded dietary requirements in all regions in 2009, with each person consuming on average about 68 grams per day— one-third higher than the average daily adult requirement. In wealthy countries, protein consumption was higher still."

http://www.wri.org/blog/2016/04/sustainable-diets-what-you-need-know-12-charts

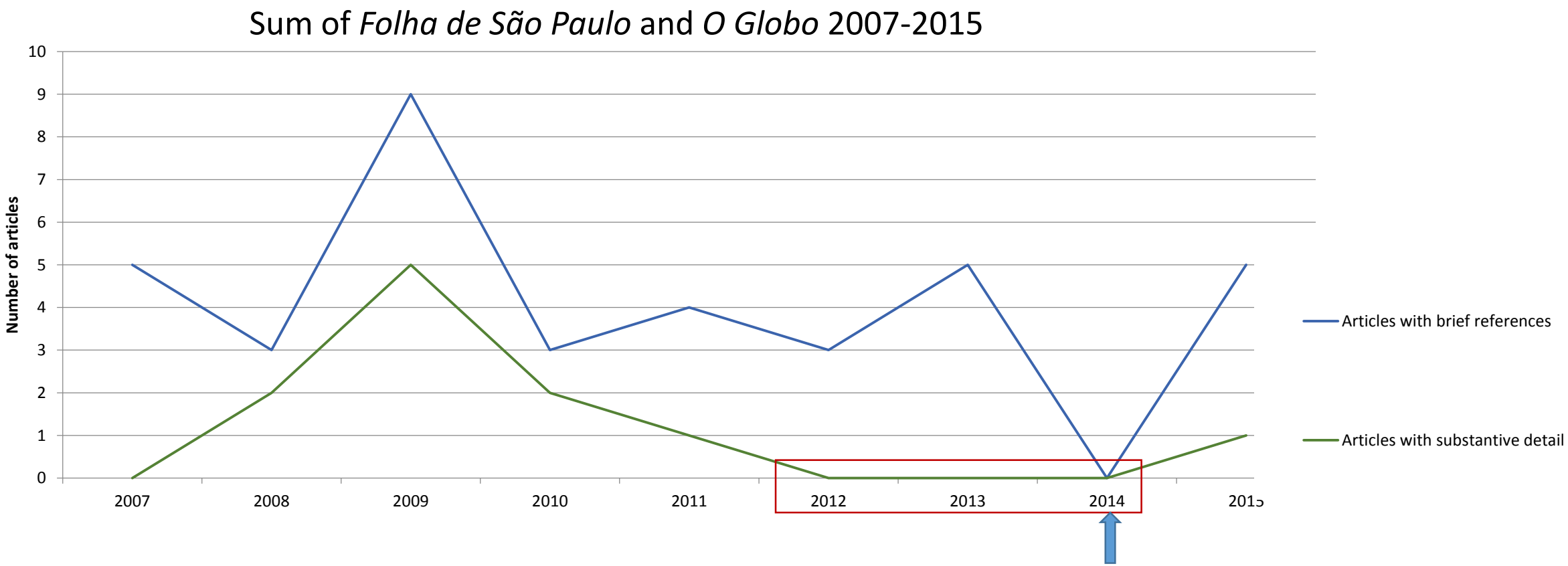
All regions already consume more protein than average dietary requirements—with highest consumption in wealthy regions.
Global average per person protein consumption exceeded dietary requirements in all regions in 2009, with each person consuming on average about 68 grams per day— one-third higher than the average daily adult requirement. In wealthy countries, protein consumption was higher still. For example, the average American man eats nearly 100 grams of protein per day, almost double the amount of protein he needs (56 g).


Para enfrentar os desafios da segurança alimentar será necessária a **intensificação sustentável da produção agropecuária, com recuperação de áreas degradadas; o aumento da produção e da eficiência da agropecuária reduzindo a pressão por novas áreas de produção**; a possibilidade de realocação das áreas degradadas como agrícolas, florestais ou para fins de preservação dos recursos hídricos;
Atenção, continuamos no cenário RCP 8.5 Já se passaram 9 anos desde 2007, quando o dramático alerta foi dado.

O Globo 2014
Objects of references to **consum*** (118 total)

- 24 - Generic (e.g. “consumption patterns”);
- 63 - Energy
- 33 – Water
- 3 – Agriculture
- 1 - Meat

Articles acknowledging problems associated with production or consumption of meat



37 brief references + 11 detailed discussions

Exemplos de breves referências

1 - O ‘pum’ da vaca… Toda a comida consumida na conferência é orgânica. O lema das ONGs que promovem eventos paralelos sobre vegetarianismo é: “Quanto mais áreas desmatadas para pasto, mais CO2 é liberado. E quanto mais gado, mais metano” (O Globo, 2009)

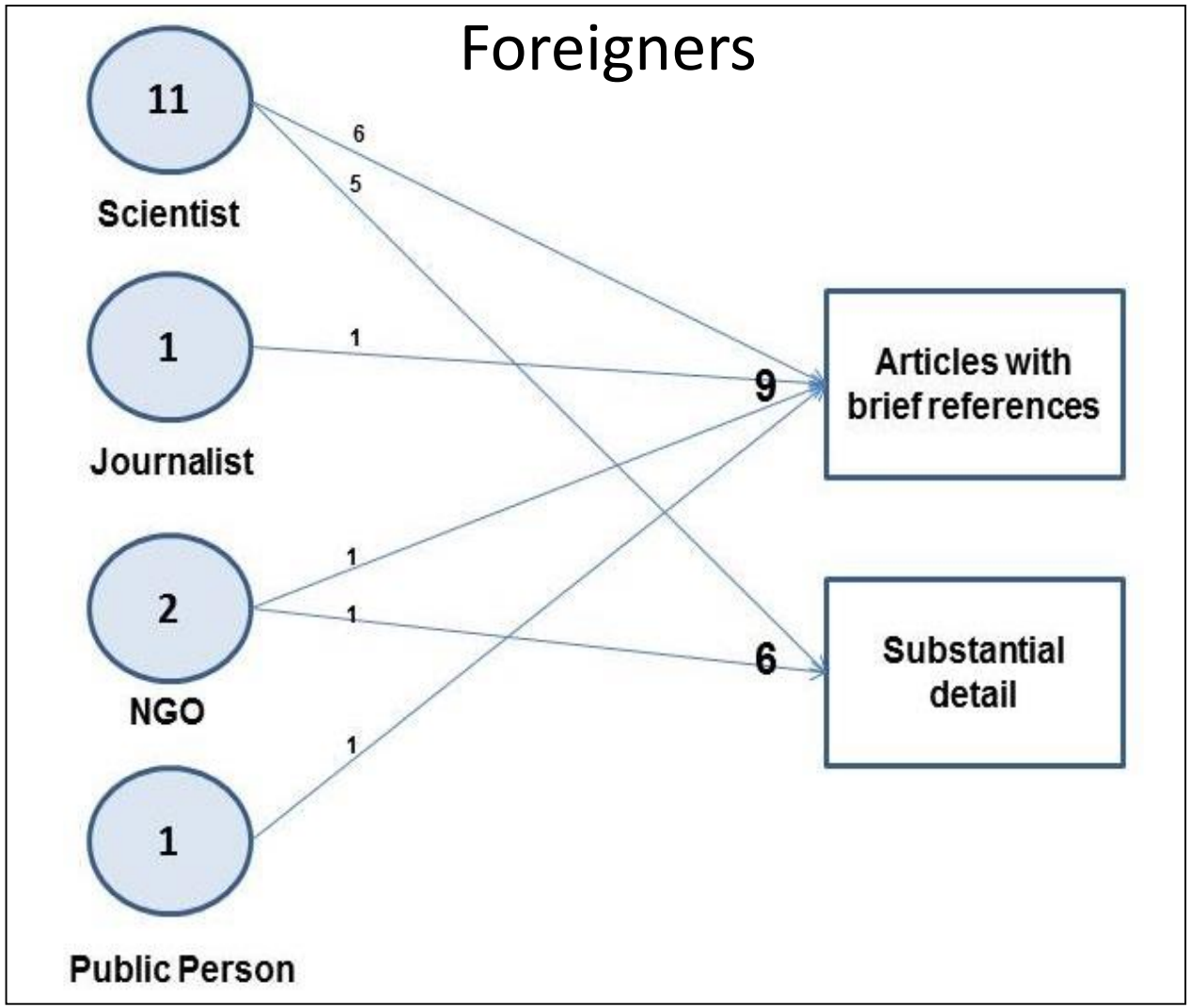
3 - O desflorestamento é causado por poucas commodities , como soja, óleo de palma e carne, mas esta demanda deve-se à mudança de dietas, e não ao crescimento populacional (O Globo, 2013).

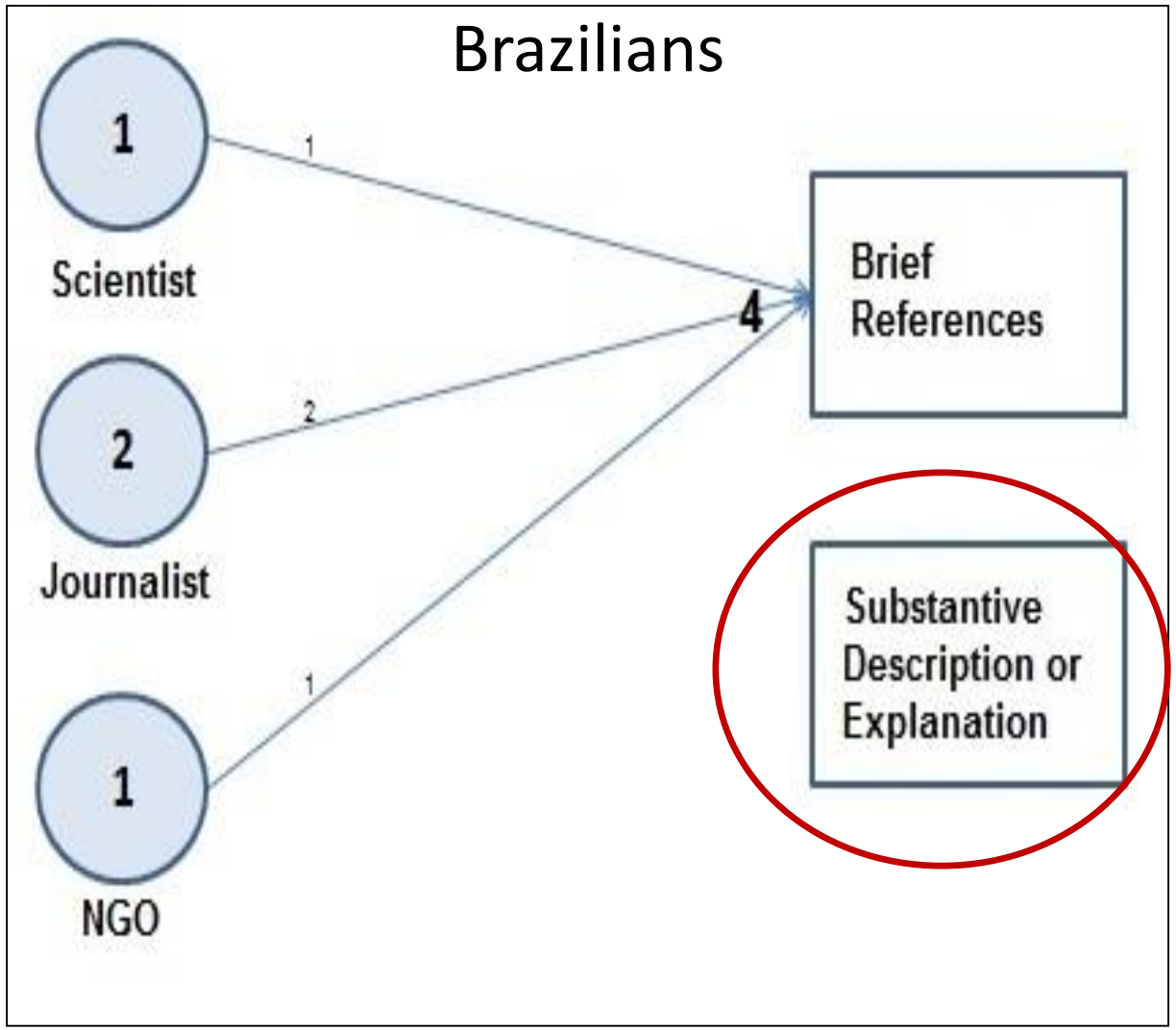
4- A digestão do capim no rúmen de bois e vacas produz metano (CH), gás do efeito estufa (GEE). ... A pecuária também contribui para emissões de CO com desmatamento e de outros gases associados a fertilizantes e resíduos animais (Folha de São Paulo, 2015).

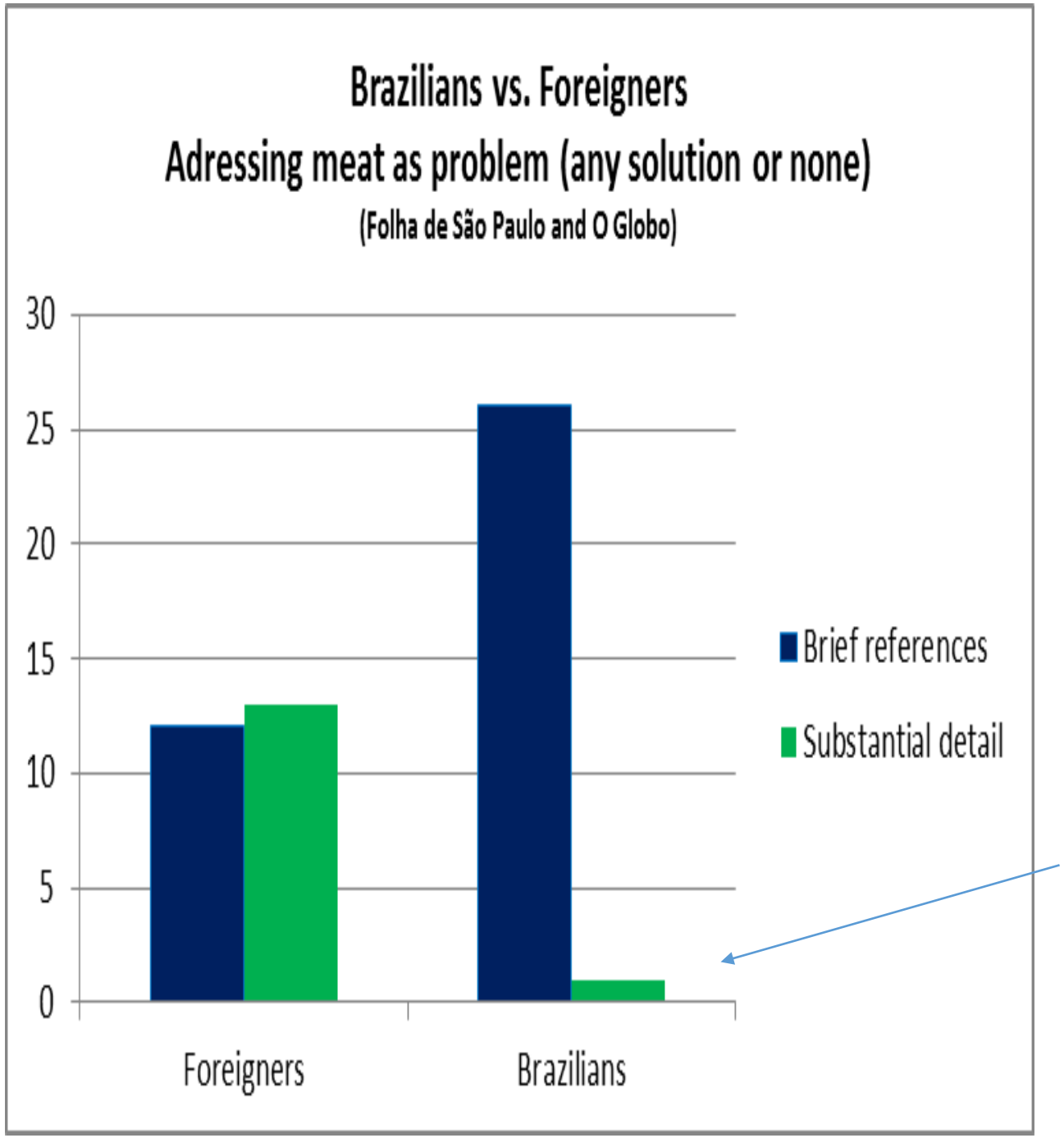
Exemplo de referência detalhada

1- “[...] Parte expressiva da liberação de carbono na atmosfera fica bem longe da fumaça liberada por usinas ou carros. Um novo estudo do Chatham House, o Real Instituto de Relações Internacionais do Reino Unido, indica que cerca de 15% dos poluentes que levam ao aquecimento global são provenientes da pecuária - seja pelo metano da digestão e estrume dos animais, ou pela produção de culturas para alimentação. De acordo com o relatório "Mudanças climáticas, mudanças na alimentação", reduzir a quantidade de carne no prato é fundamental para assegurar que a temperatura global não avance mais do que 2 graus Celsius neste século...Mudar a alimentação pode cortar pela metade os custos das futuras medidas contra o aquecimento global.” (O Globo, 2015)

Discussions of Less Meat as Solution







Folha SP 2009, 1 June, "Consumo cego acelera desmatamento… diz ONG"

"It is not news that livestock causes one of the greatest pressures for deforestation in the Amazon region. But what [**Greenpeace**] has does is **track livestock products** from meat processing plants for exportation. And, according to it, **the 'blind consumption of raw materials is fueling deforestation and climate change'"** .

Strong editorial defenses of livestock

Examples: O Globo (2014) & Estado de Sao Paulo (2015)

POR **EDITORIAL**

21/08/2014 0:00

9/25/2015 Pecuária no rumo certo - Opinião - Estadão

ESTADÃO

Pecuária no rumo certo

MAURÍCIO PALMA NOGUEIRA - O ESTADO DE S.PAULO

21 Abril 2015 | 02h 03

A pecuária é uma das atividades mais criticadas por quem se preocupa com questões ambientais e sociais. A preocupação é legítima e a pressão da sociedade é fundamental para acelerar o processo de adaptação do setor produtivo a um mundo cada vez mais populoso e sedento por qualidade de vida. Os supostos efeitos negativos da pecuária brasileira, porém, são frequentemente superestimados.

Um exemplo são as emissões de metano e gás carbônico pelos bovinos. Em média, um bovino emite 53 kg de metano e 50 kg de gás

O GLOBO

Agronegócio volta a figurar no debate político-eleitoral

Por suas conhecidas restrições à atividade do agronegócio, agora como candidata à presidência, Marina Silva será cobrada a se manifestar sobre o tema

No entanto, determinados "profetas do apocalipse" fazem previsões catastróficas sem qualquer base científica. Alguns desses terroristas ambientais mais precipitados têm atribuído os problemas climáticos do Brasil ao aquecimento global, ao desmatamento de nossas florestas e à agropecuária praticada no país. A realidade é que eventos climáticos semelhantes sempre existiram, com maior ou menor intensidade.

- "Demonizado" por grupos políticos de esquerda, que o confundem com o velho latifúndio improdutivo, o agronegócio é quase sempre vítima de preconceito ideológico, inclusive de ambientalistas, como se fosse impraticável compatibilizar atividade agrícola e pecuária com a preservação da natureza.

“We have to learn how to learn, how to be a learning society”

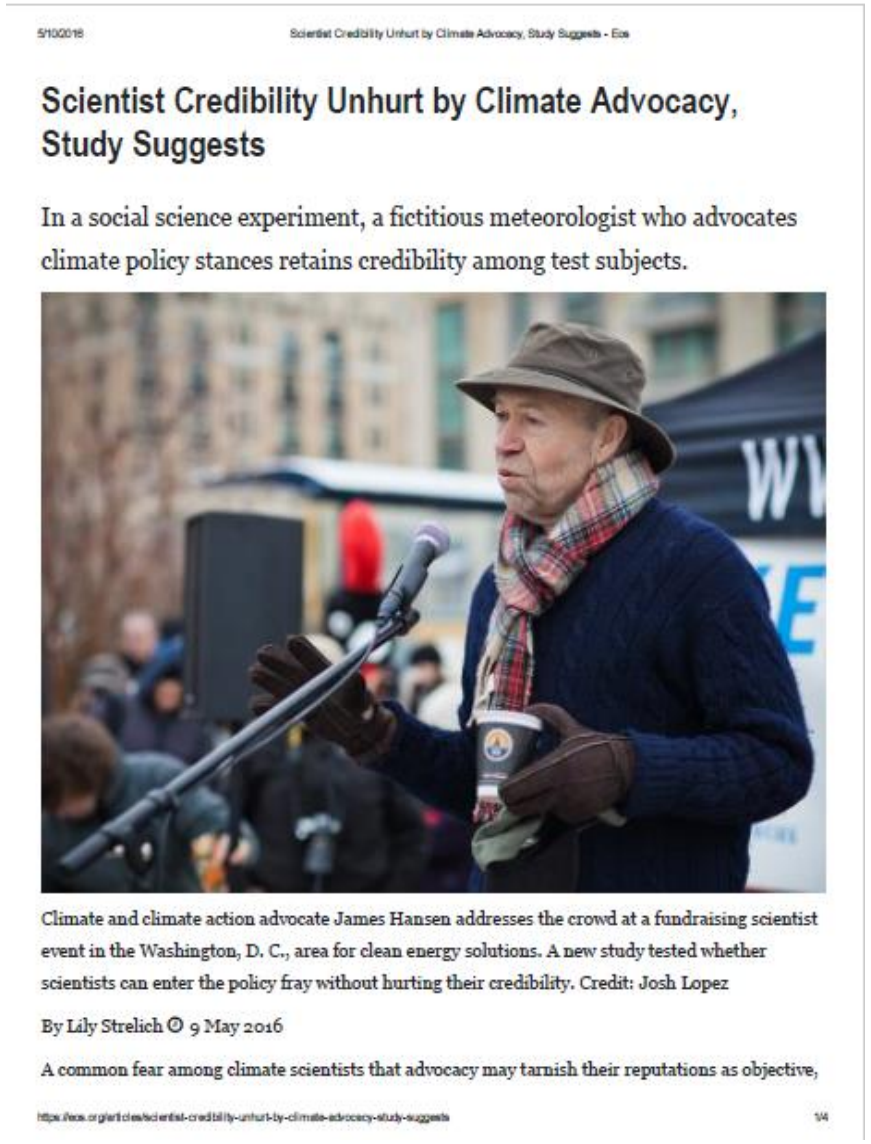
Joseph Stiglitz (Nobel laureat, economist), Creating a Learning Society

(2014 RSA Scotland Angus Miller Lecture, youtube)

Conclusions

- Science is also a social process and needs to be examined critically for its own “human dimensions”
- Critical (scholarly) examination of the science-society/policy interface needs to be a central part of the research agenda
- Transformation of policy & science is impossible without some level of discomfort

Scientists might be surprised: Value-Neutral Predictions are not universally valued



5/10/2016 Scientist Credibility Unhurt by Climate Advocacy, Study Suggests - Eos

Scientist Credibility Unhurt by Climate Advocacy, Study Suggests

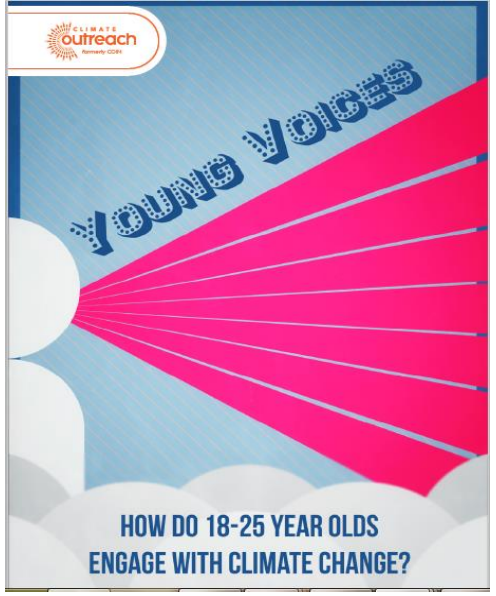
In a social science experiment, a fictitious meteorologist who advocates climate policy stances retains credibility among test subjects.

Climate and climate action advocate James Hansen addresses the crowd at a fundraising scientist event in the Washington, D. C., area for clean energy solutions. A new study tested whether scientists can enter the policy fray without hurting their credibility. Credit: Josh Lopez

By Lily Strelich © 9 May 2016

A common fear among climate scientists that advocacy may tarnish their reputations as objective,

https://eos.org/articles/scientist-credibility-unhurt-by-climate-advocacy-study-suggests 1/4



- **Climate Outreach Research, LSE study (2015)**
- "there has been a collective failure to talk to young people about climate change in a way that inspires them. Too many assumptions have been made by communicators…."
- British youths wish to have climate discussions linked to political issues rather than sanitized to exclude them; they find the urgency of climate change reduced by descriptions of its effect on future generations

http://climateoutreach.org/research-reveals-current-climate-engagement-strategies-are-failing-to-reach-young-people/