

10th R. Geigy Award – 7 December 2018

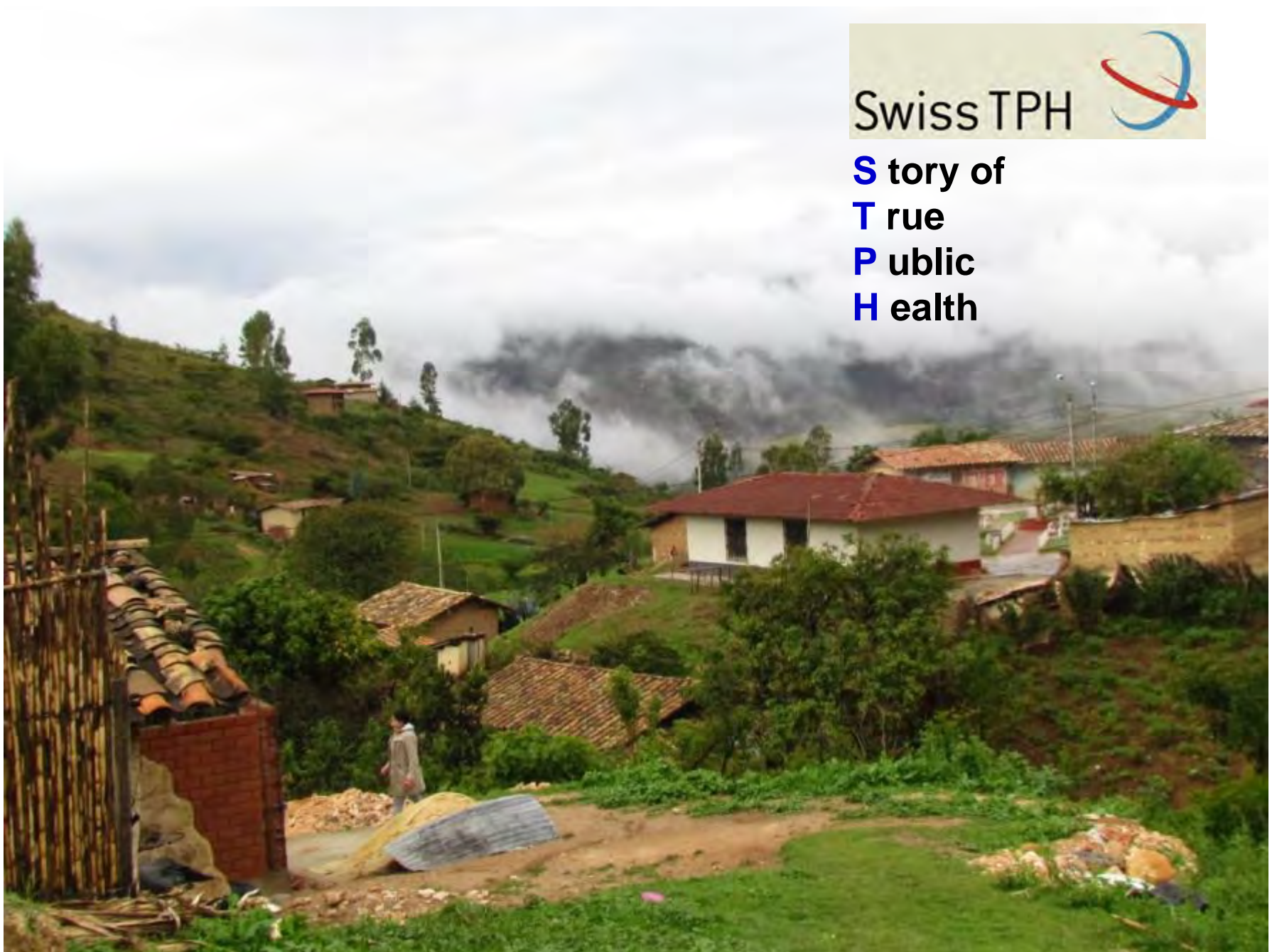


20. December 1902 – 8 March 1995

Swiss TPH



Story of
T rue
P ublic
H ealth







Universidad Peruana Cayetano Heredia, Lima







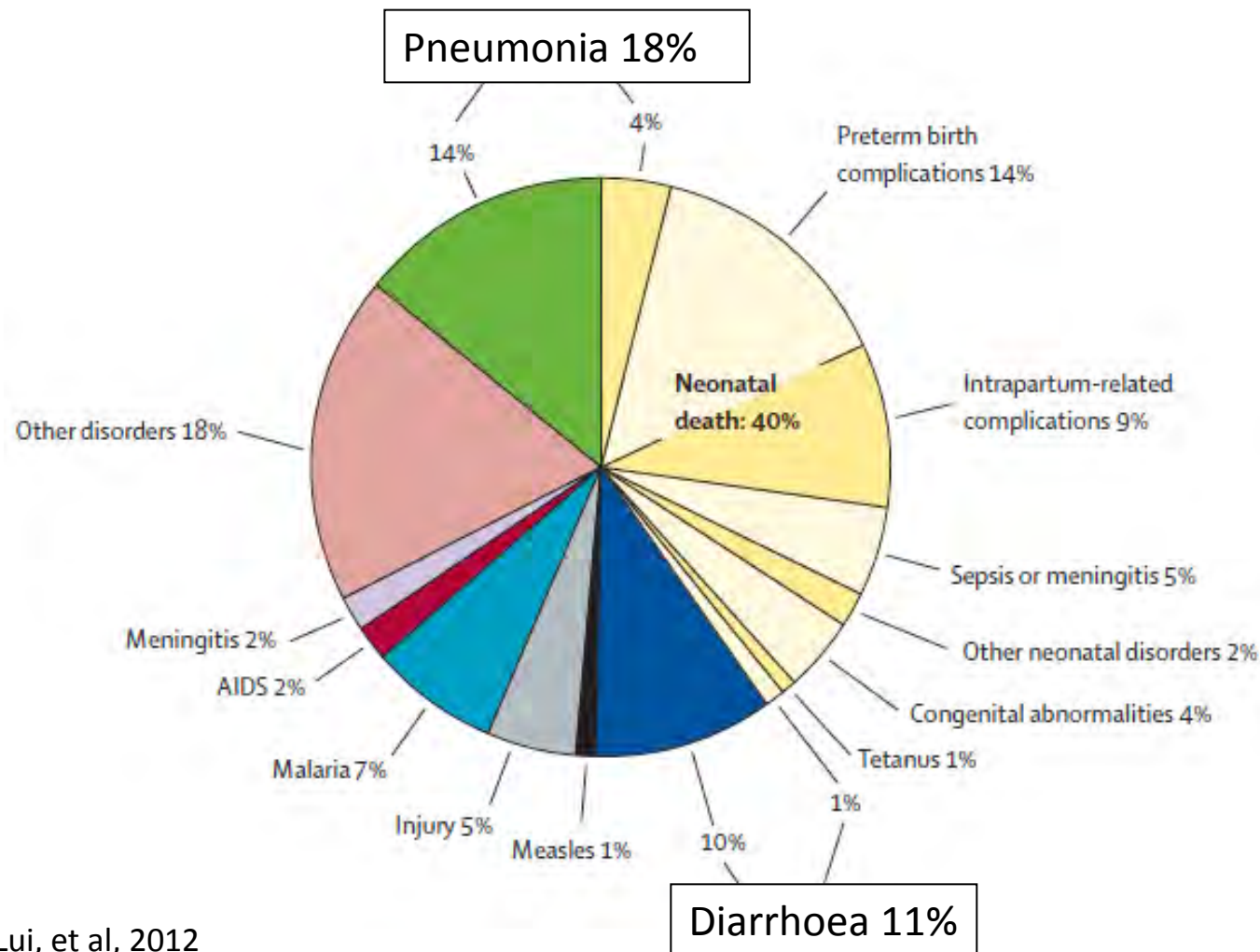


Science is more than just fascinating knowledge, it is also useful knowledge. I believe passionately that science should inform our decisions.

Jane Lubchenco



➤ In 2010, 7.6 million children under-five died worldwide.



Contribution of undernutrition to each cause of death

Burden of disease attributable to Environmental factors

Lui, et al, 2012

Hygiene and One Health



Non-communicable disease,
environmental exposures & HAP



**Integrated Household-based Approaches
Livelihoods and HH economics**



Water quality and HWT



Child development and health

Adaptation to Climate Change and Health

Cayetano - Swiss TPH Health Research Platform

Daniel Mäusezahl (CH),
Stella Hartinger (Peru)

2 Project leaders 6 PhD
2 Postdoc 13 MSc
1 Fellow 1 MPH



Community Randomized Control Trial

- San Marcos Province, Cajamarca Region, northern Peru
- Cluster Randomized Trial: **51 communities** (5 – 30 children)
- Age: 6 – 35 months
- 12 month follow-up (Feb-09 – Jan-10)

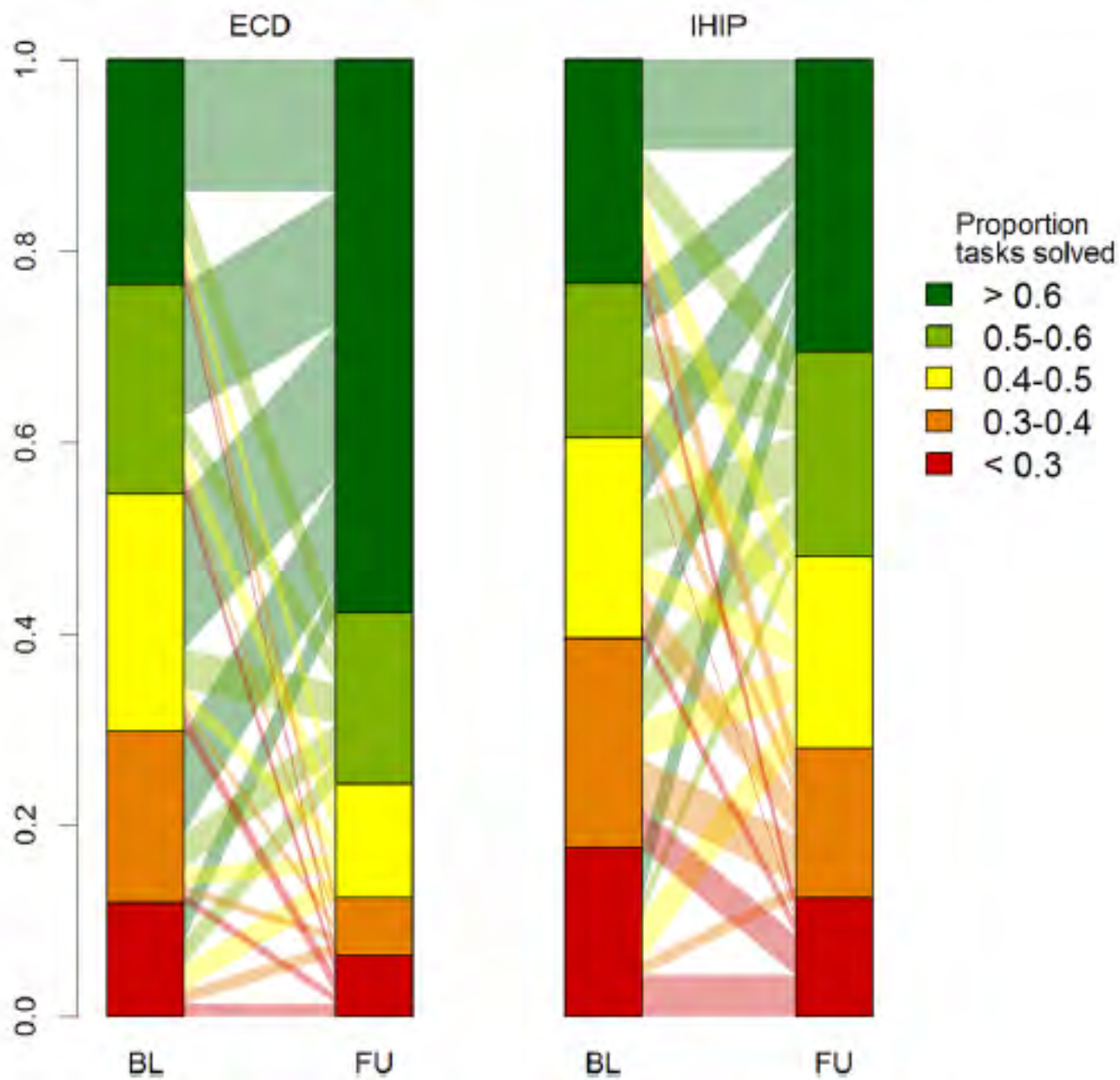


IHIP-Trial: Integrated Interventions



Intervention arm: Kitchen environment

Control arm: Early Child development



Sustainability after 12, 24, 72 months

Interventions	12 months N=216	24 months N=177	
OPTIMA-improved stove			
Do you have the OPTIMA -where you live?	200 (92%)	161 (90%)	124 (80%)
Do you use the stove?	194 (90%)	152 (85%)	124 (80%)
Do you use it everyday?	185 (86%)	143 (80%)	123 (79.5%)
Kitchen Sink			
Do you have a kitchen sink were you live?	177 (82%)	155 (88%)	
Do you use the sink?	177 (82%)	135 (76%)	
Sink in good conditions	160 (73%)	101 (57%)	
SODIS -HWT			
Do you use SODIS	147 (71%)	11 (6%)	

BUT do the ICS keep their original quality?



**Grupo Temático
Energía para Cocinar**

Mejorando la calidad de vida

Cocinas Mejoradas implementadas en el Perú

[ver Resumen](#)

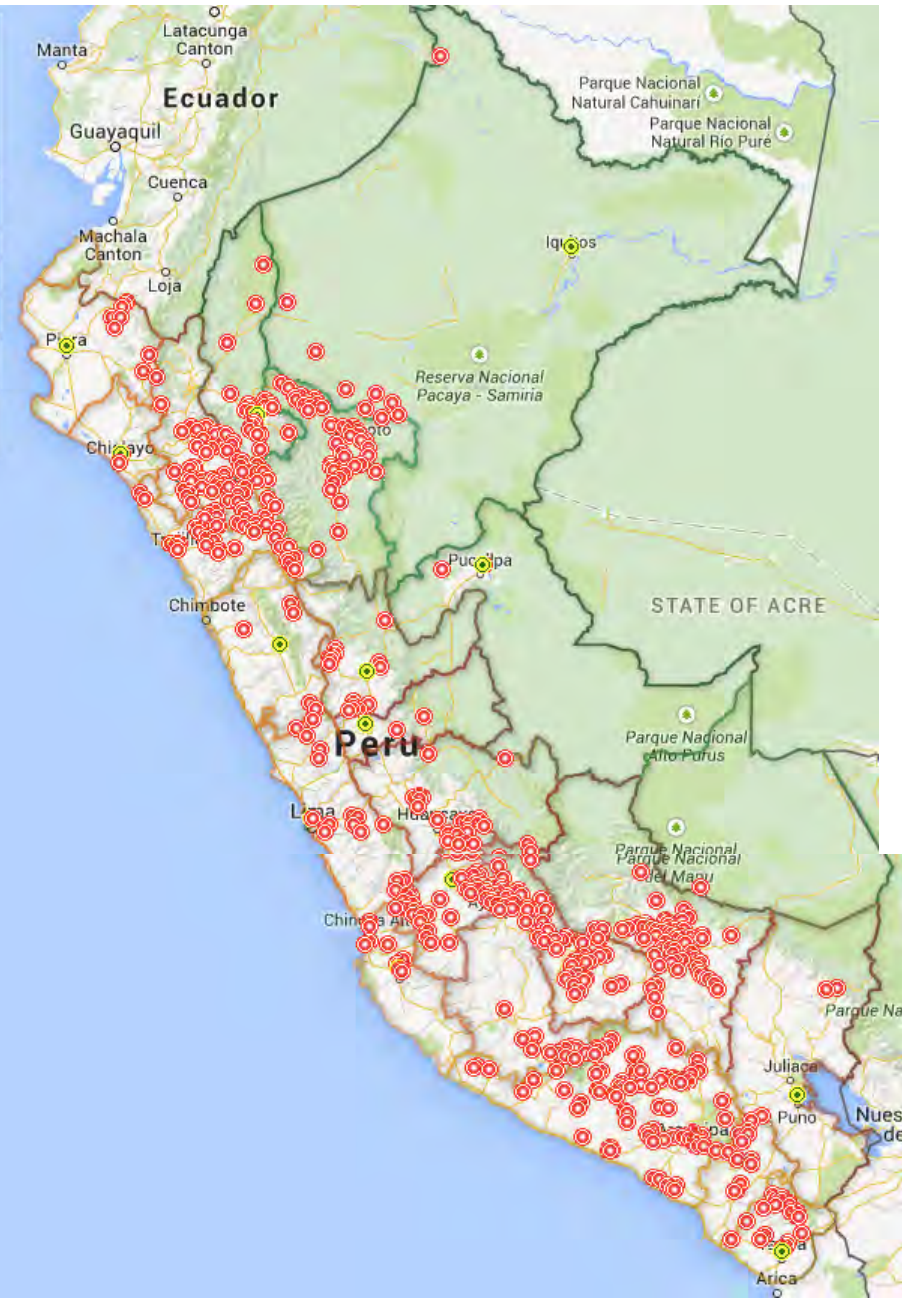
Cocinas en Hogares por Departamento ☒

Cocinas en Hogares por Distrito ☒

Cocinas en Hogares por Centro Poblado ☐

Ver Mapa de Pobreza por Distrito ☐

Busque Poblado, Distrito, Provincia, ...



AMAZONAS	5,182
ANCASH	1,687
APURIMAC	18,179
AREQUIPA	14,404
AYACUCHO	17,695
CAJAMARCA	45,673
HUANUCO	6,086
HUANCAVELICA	34,770
LA LIBERTAD	58,732
ICA	624
JUNIN	2,168
LAMBAYEQUE	1,949
LIMA	3,183
LORETO	3,509
MOQUEGUA	4,073
PASCO	4,983
PIURA	20,652
CUSCO	41,904
PUNO	1,154
SAN MARTIN	4,159
TACNA	9,802
UCAYALI	520

TOTAL : 301'088



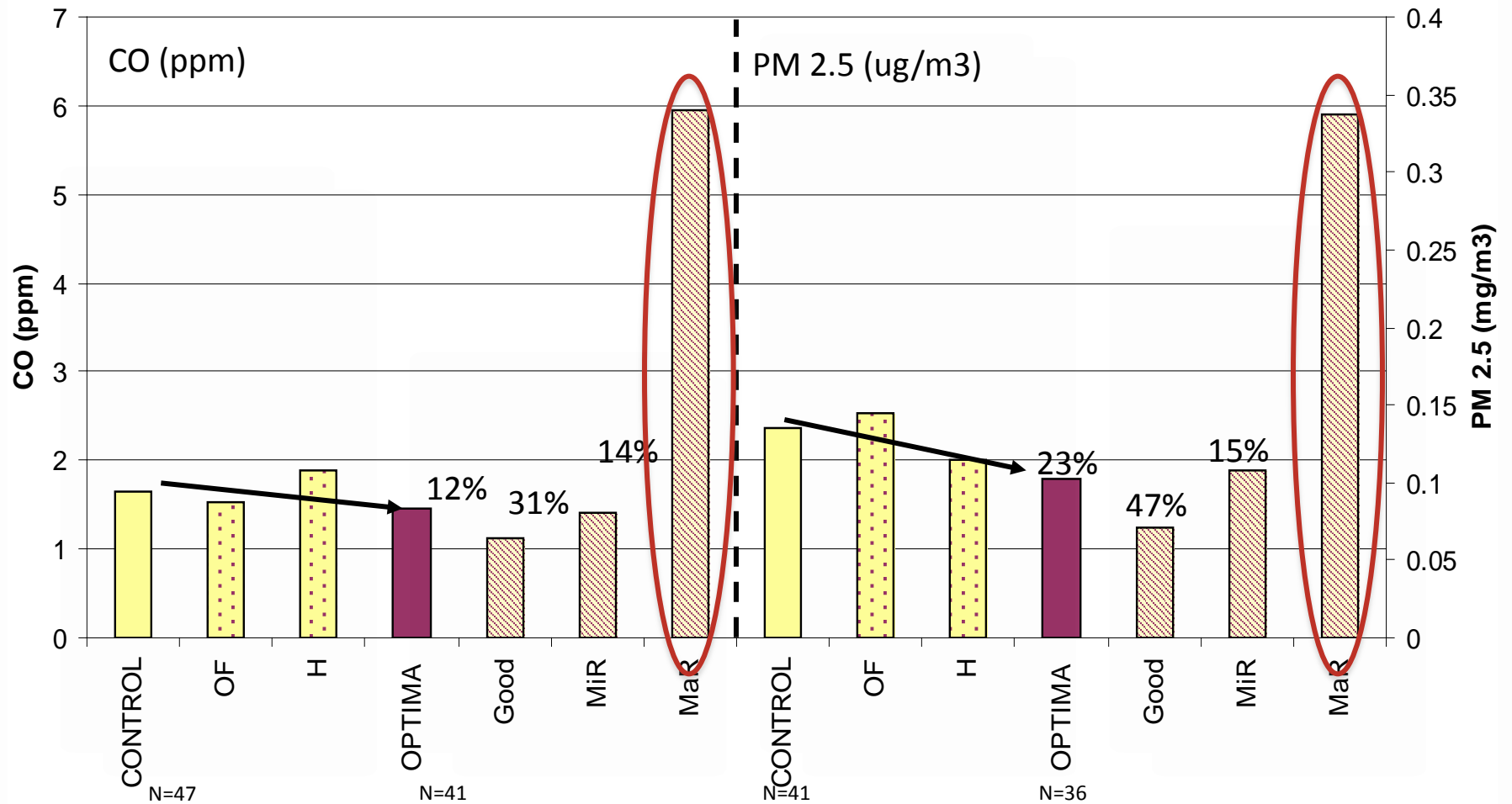
How to define adoption?

Rehfuess E. A. et al (2014) & Puzzolo E. et al (2013)	<p>Acquisition: stoves are purchased or installed without any reference to their later use.</p> <p>Initial adoption: use is assessed < 1 year from acquisition.</p> <p>Sustained use: both medium-term (assessed 1–2 years after acquisition) and long-term sustained use (longer time periods).</p>
Lewis J. J. et al (2012)	Adoption represents some use of an ICS.
Person B. et al (2012)	No definition given. Generally they speak of adoption as "general use" of a cookstove.
Ruiz-Mercado I. et al (2011)	Adoption: long-term sustained use (no further specification).
Shankar A. et al (2014)	Adoption is defined as the acquisition and substantive use of a technology by the user.
Barstow C. K. et al (2014)	Reported use
Stanistreet D. et al (2014)	<p>Adoption: Initial uptake and sustain use</p> <p>Sustained use = Use \geq 12 months</p>
Stanistreet D. et al (2014)	adoption = initial uptake and sustained use = use over 12 months or longer
Troncoso K. et al (2014)	Adoption Index: Frequency of stove use, condition of ICS, level of satisfaction with the ICS and interest in replacing with a new ICS
Siddig El Tayeb M. et al (2003)	None given

Personal & Kitchen evaluations (CO and PM 2.5)

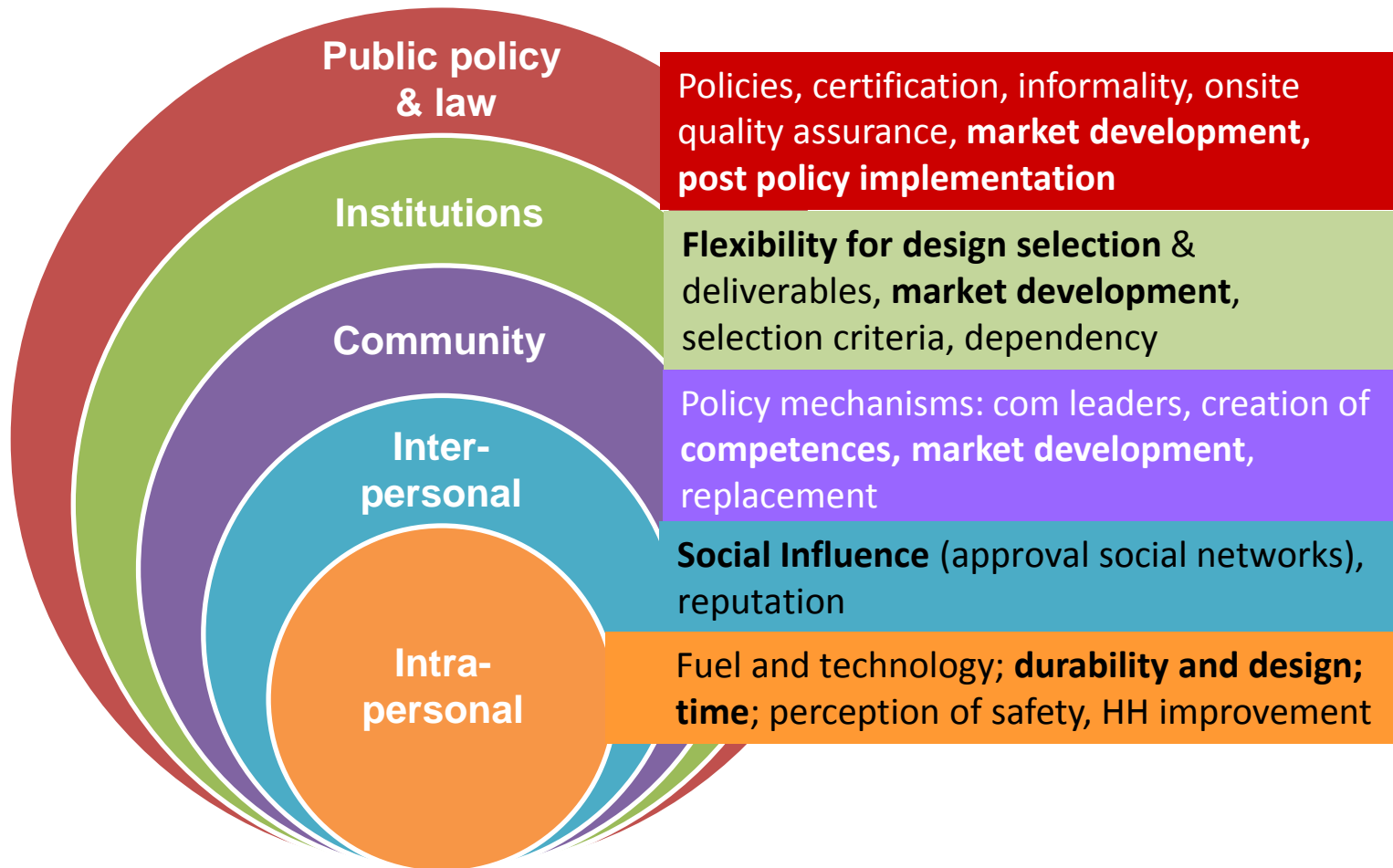


Personal exposure “time of mother in kitchen”

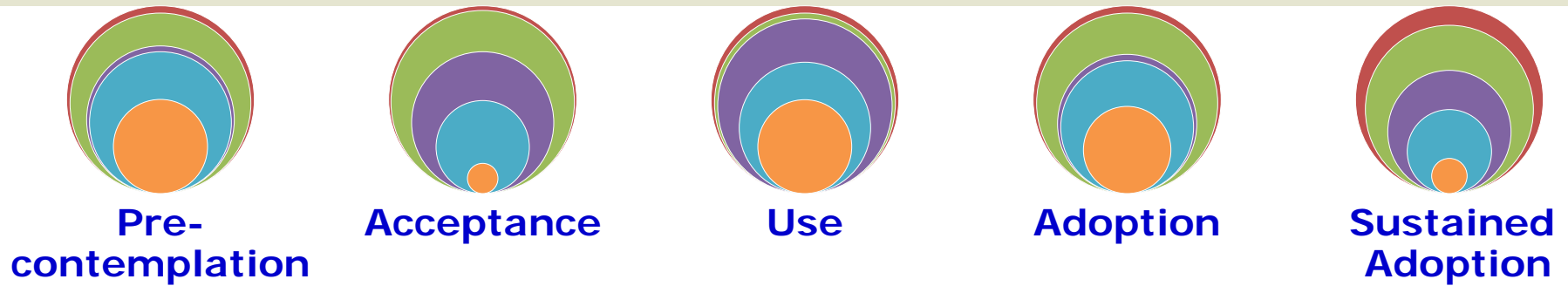


Socio - Ecological Model

ICS implementation happens in a system context that is often neglected



... the SEM can provide a needed systemic view to address adoption at all level of the adoption continuum.



The adoption process is intrinsically linked to supply chain and market development

Project /
programme

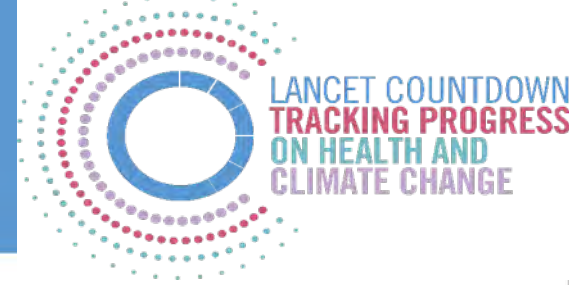
User

Research

1. Integrated Approaches: Nestor Nuño (PhD)
2. Livelihoods & Household economics: Raphaela Graf
3. m-Health: Matias Finat, Bladimir Morales,
4. WASH: Serena Haver
5. AMR & OneHealth: Anika Larson
6. Household Behaviors: Nestor Nuño
7. ECD: Paola Castellanos
8. NCDs: Giuliana Sanchez, Guido Bendezu,
9. Env. Exposures: Patricia Mallma (PhD)
10. Climate Change: Luciana Blanco



Adaptation to Climate Change and Health



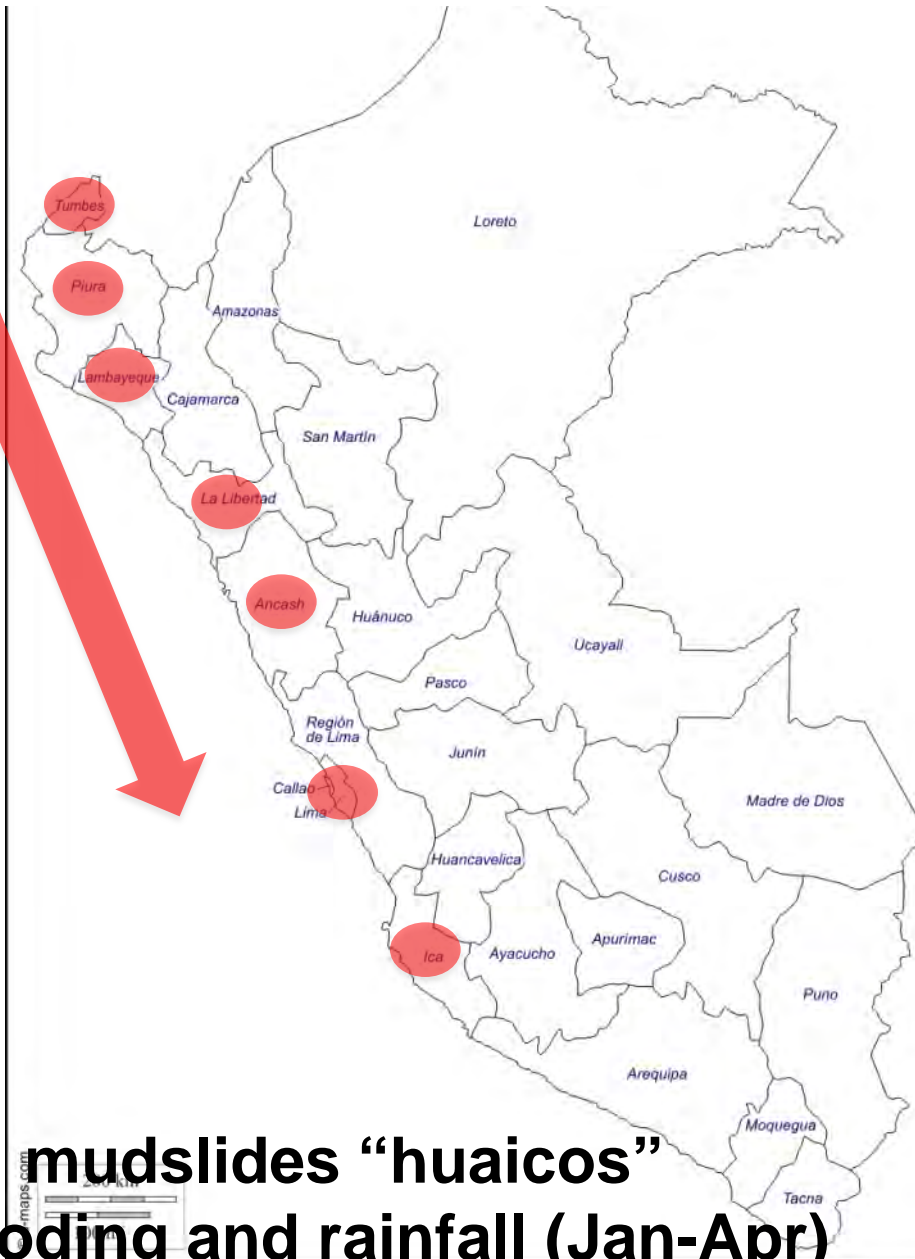
Key Messages

“Present day changes in heat waves labour capacity, vector-borne disease, and food security provide early warning of compounded impacts expected if temperature continues to rise.”



“A lack of progress threatens both human lives and the viability of the national health systems they depend on, with the potential to disrupt core public health infrastructure and overwhelm health services.”

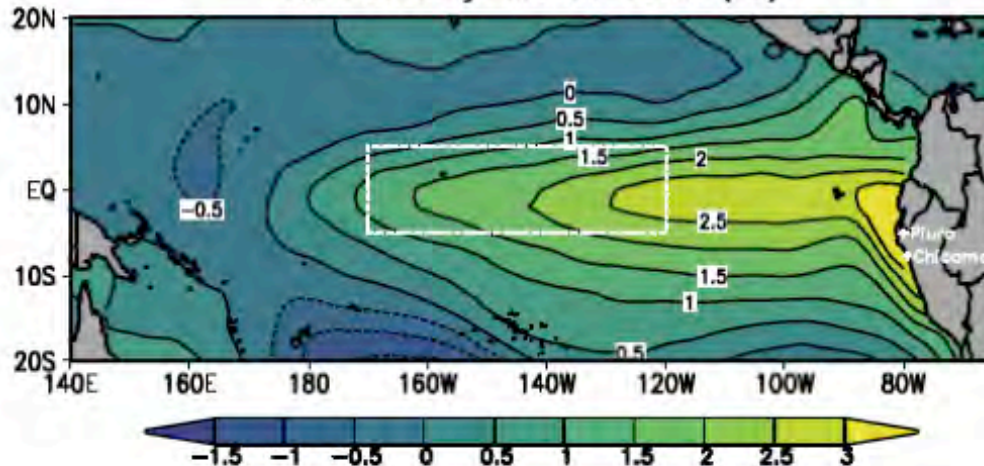
El Niño Coastal Event -2017



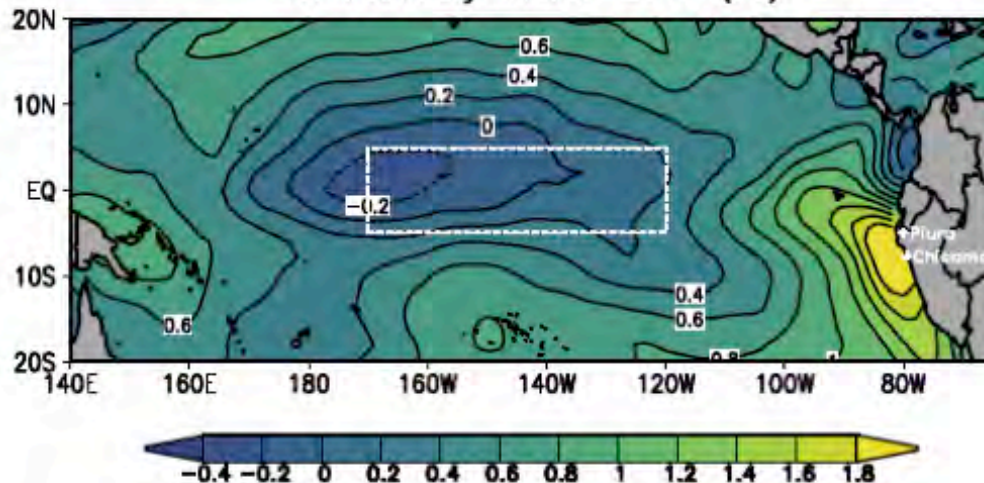
691 mudslides “huaicos”
Flooding and rainfall (Jan-Apr)

What is the El Niño Southern Oscillation (ENSO) ?

a) Sea surface temperature anomaly for February–March 1998 (°C)



b) Sea surface temperature anomaly for February–March 2017 (°C)



Warm ENSO Phase “Central”

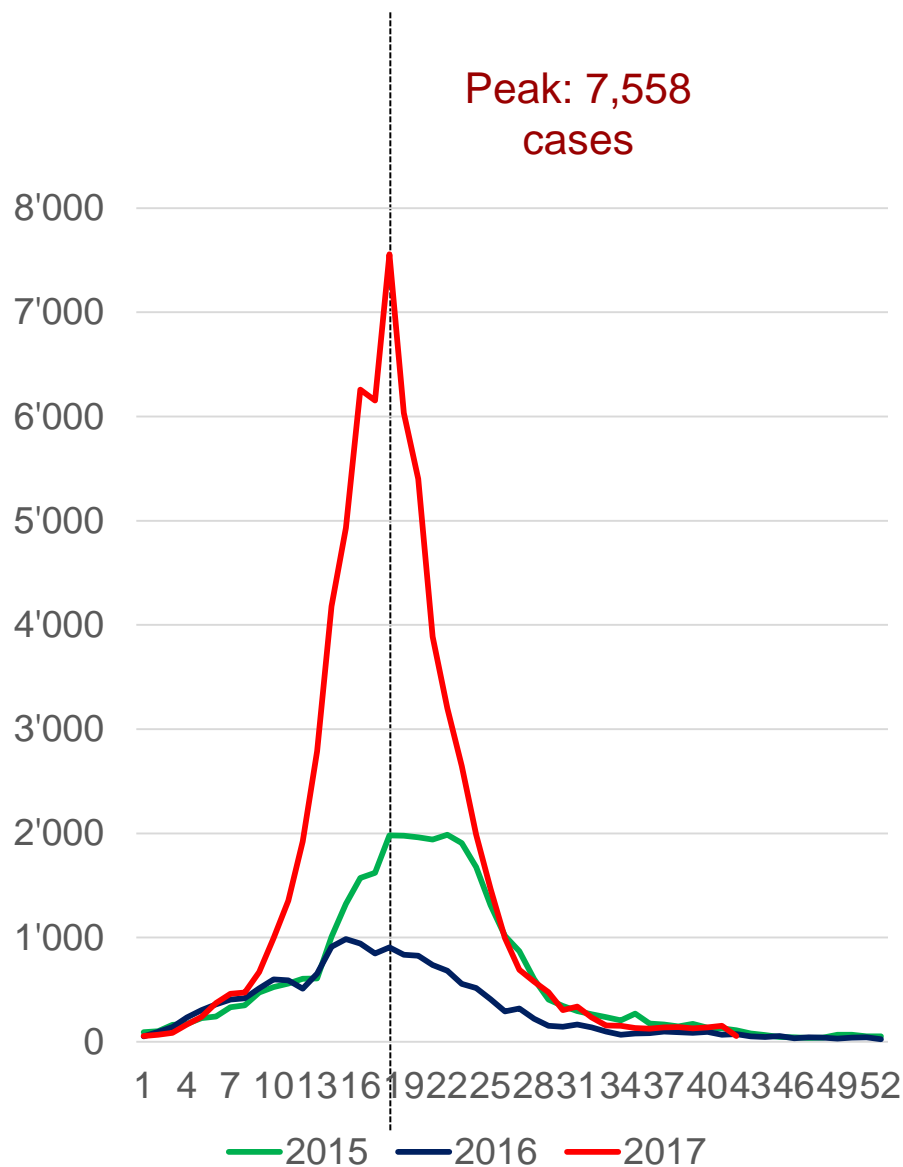
- Warming at central Pacific basin (3+4 / 1+2)
- Time to react (~4 months)

Neutral/cold ENSO “Coastal El Niño”

- No warming at central Pacific basin
- Strong coastal warming ($>+2^{\circ}$ C)

Results Health –Dengue

	2016		2017	
	Cases	Incidence rate per 10,000	Cases	Incidence rate per 10,000
<i>Dengue</i>				
<i>Ancash</i>	405	2.6	1,567	13.5
<i>La Libertad</i>	4,452	23.7	5,233	27.5
<i>Lambayeque</i>	1,419	11.2	1,464	11.4
<i>Piura</i>	5,653	30.4	40,429	215.8
<i>Tumbes</i>	953	39.6	3,053	125.5
<i>Lima</i>	61	0.1	351	0.3



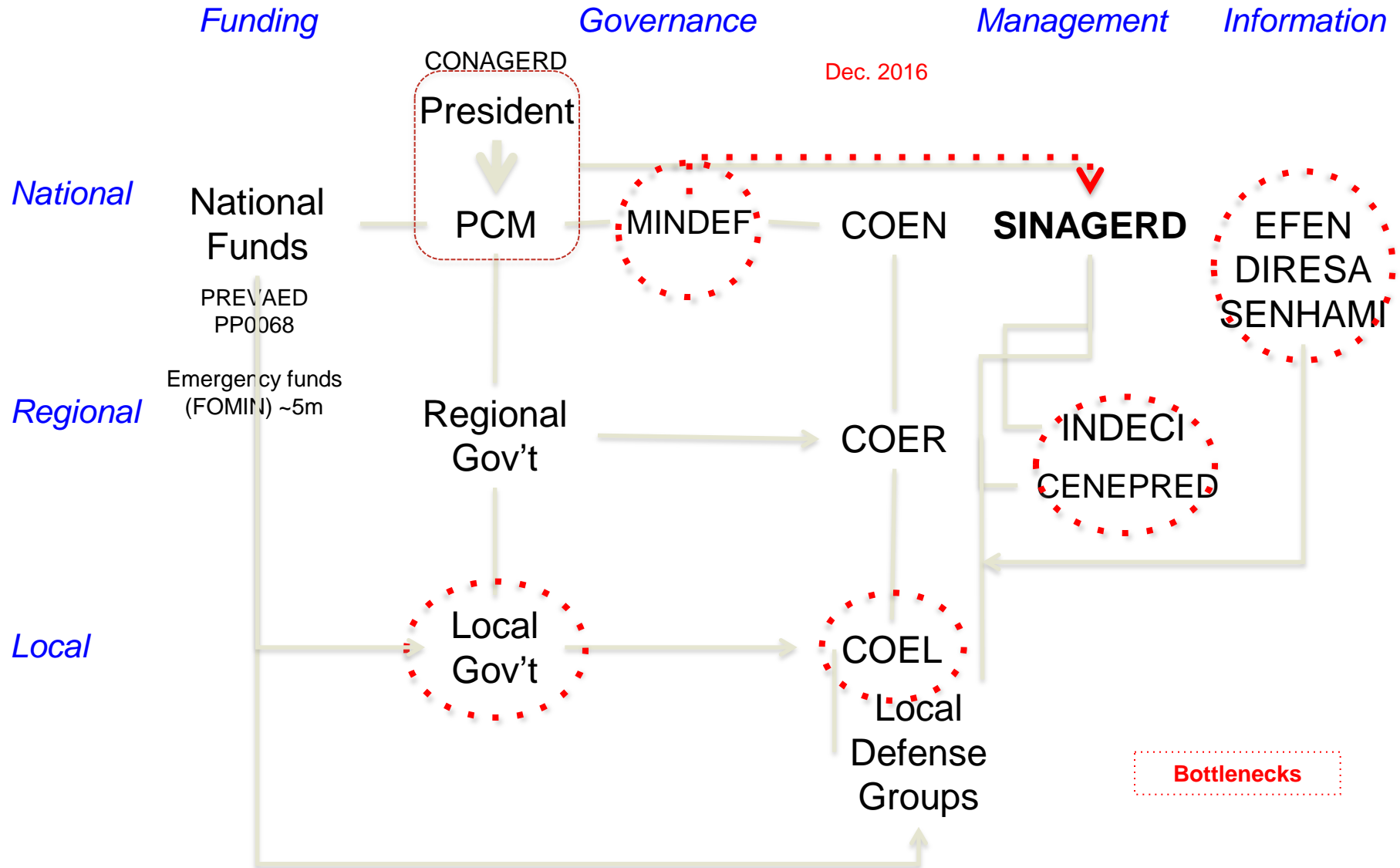
Type of infrastructure	Description	Total cost	
		(US\$ Million)	% of total
Transport	Highways, roads, and bridges at the national and local level	2,994	49.4
Education	Public schools renewal or reconstruction	819	13.5
Water and sanitation	Renewal of water supply and sewage facilities	626	10.3
Urban lanes	Reconstruction of affected lanes and pathways	455	7.5
Agriculture	Reconstruction of irrigation channels	413	6.8
Health	Renewal or reconstruction of hospitals and small-scale health centers	413	6.8
Housing	Renewal or relocation and reconstruction	342	5.6
Total		6,061	100.0

Economic Loss

- Highest in the affected areas
- Estimate increases to **7.7 billion**
- Accounts 3.5% of the national GDP & 11% of the total GDP of the affected regions.**



Results - Policy



“I wish we had been able to predict it with months in advance. It seems to have come out of nowhere. Although the far-eastern Pacific was somewhat warm throughout 2016, the warming in January 2017 was intense and abrupt”

Ken Takahashi-Director of the National Meteorological and Hydrological Service

So what does the future hold for the

Multigenerational cohort



Non-communicable of disease on Andean populations

Early child development
Dual burden of disease
Epidemiology of Metabolic Syndrome, CVD markers and COPD
Food consumption patterns and NCDs
Estimate the exposure-response relationship
Bio-banking, biomarkers













¡Muchas gracias!

