

# Transformative solutions to high-end climate change

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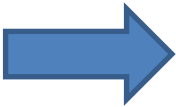
# My goal today...

- Not to talk about problems and risks...  
but about *solutions and opportunities*.
- Argue that High-End climate change (>2°) requires *transformative solutions*, as conventional strategies and solutions are not enough.



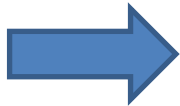
*Climate is not only an amplifier of risks but also of opportunities*

# Three simple messages...

- 1. Conventional climate assessment approaches face severe limitations** to develop adequate strategies and solutions to cope with High-End climate change. **New transformative tools and methods are required** -and some already available.
- 2. New approaches integrating science and policy for transforming global climate governance are needed:**
  -  **➤ Integrated Climate Governance**
  - Global Systems Science**
- 3. Most transformative forces** to cope with High-End climate change **are social forces, not climate-driven**. Innovative climate strategies and solutions could take advantage of, and support, a number of global transformative forces already evident **outside of the climate domain**.

# 1. Transformation according to the IPCC AR5

- “A **change in the fundamental attributes** of natural and human systems [...that...] reflects strengthened, altered, or aligned paradigms, goals, or values towards promoting adaptation that **supports sustainable development, including poverty reduction**” (IPCC 2014; WGII, SPM p.5).



*Mitigation is not included*

- The AR5 WGIII (Ch6) talks about **‘transformation’ (not transformative) pathways** as a way to get out of the existing climate quandary.
- The assessment of transformation pathways still heavily **relies on** traditional cost-benefit analyses and **conventional methods** (hence it is a ‘transformational approach’= transformation + conventional; not a transformative one)



*The notion and implications of transformation in climate science and policy are poorly understood*



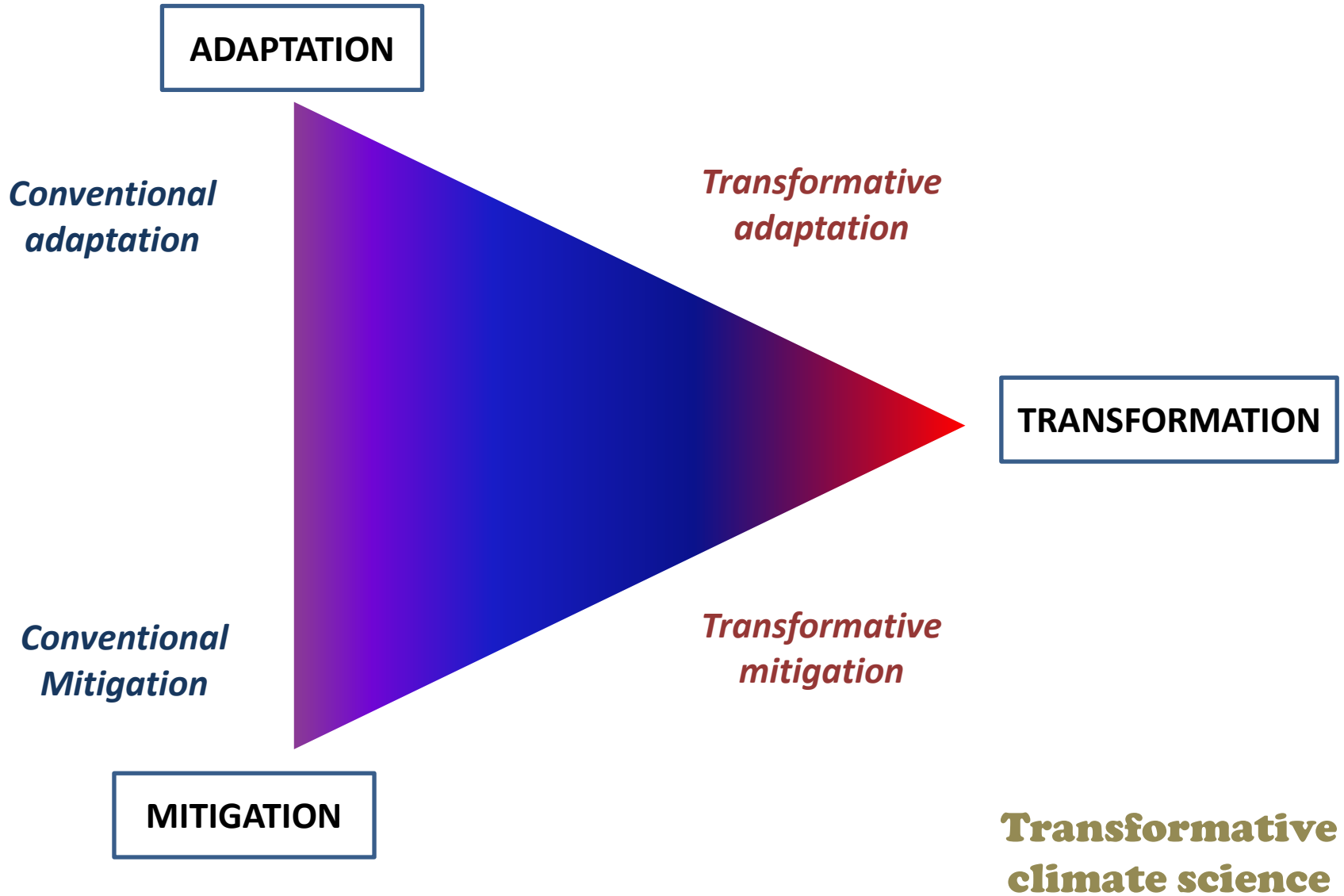
# What we mean by transformative?\*

Focus /dimension	Conventional	Transformative
<b>Institutional change</b>	Not expected or minimal	Crucial
<b>'Systems of systems'</b>	No; (only single issue or system)	Crucial (e.g. systems' coordination)
<b>Systems representation and modelling approach</b>	Linear	Non-linear (including tipping points, phase transitions, bifurcations, ...)
<b>Feedbacks and irreversibilities</b>	Poorly considered	Crucial (e.g. multiple considered at the same time)
<b>Time inclusion</b>	One scale, short-term	Multiple scales, including long-term
<b>Assumptions on present system attainability</b>	"The present system is still attainable"	"The present system is no longer attainable"
<b>Visions and values</b>	Not included	Crucial (to trigger & orient change)
<b>Learning required</b>	First order (doing the same better)	Second order (doing sth different from a different paradigm)
<b>Uncertainty</b>	Low (e.g., prob. distributions assumed to be known)	High and many (e.g. indeterminacy)

\* Synthesis based EU projects [MATISSE](#), [ADAM](#), [VISION RD4SD](#), [GSDP](#), [CLIMSAVE](#), & [IMPRESSIONS](#)



# Conventional vs transformative M&A



## 2. New integrative science-policy approaches to support Global Climate Governance

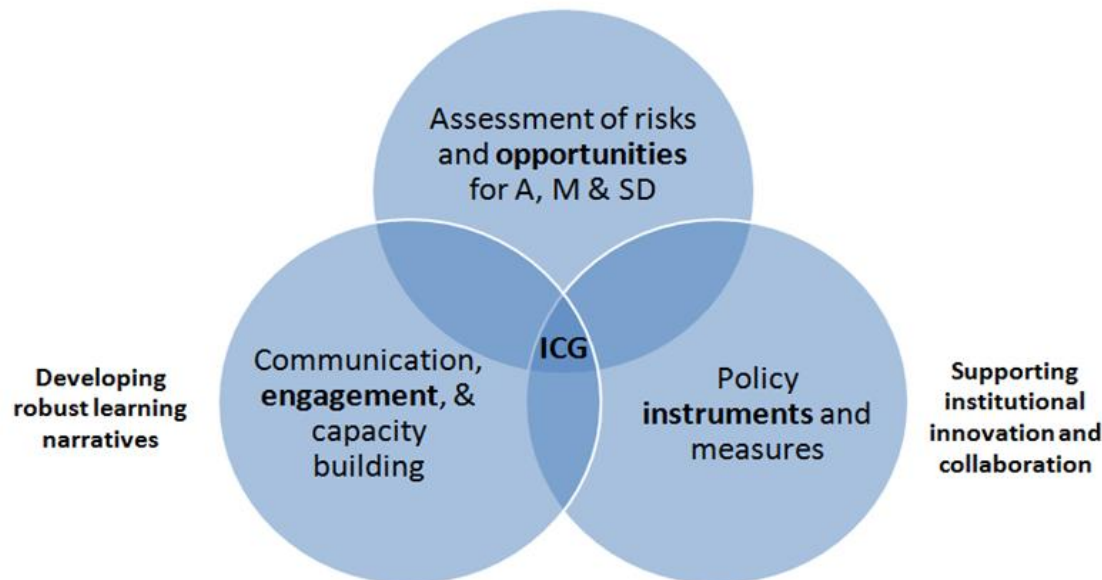
### ***Global Systems Science\****:

“Development and test ‘Global Systems of interlinked solutions to global problems’”.

### ***Integrated Climate Governance \*\**** :

“Integrated Assessment of climate A,M& SD risks & opportunities + Multi-level governance + transformative learning & capacity building “

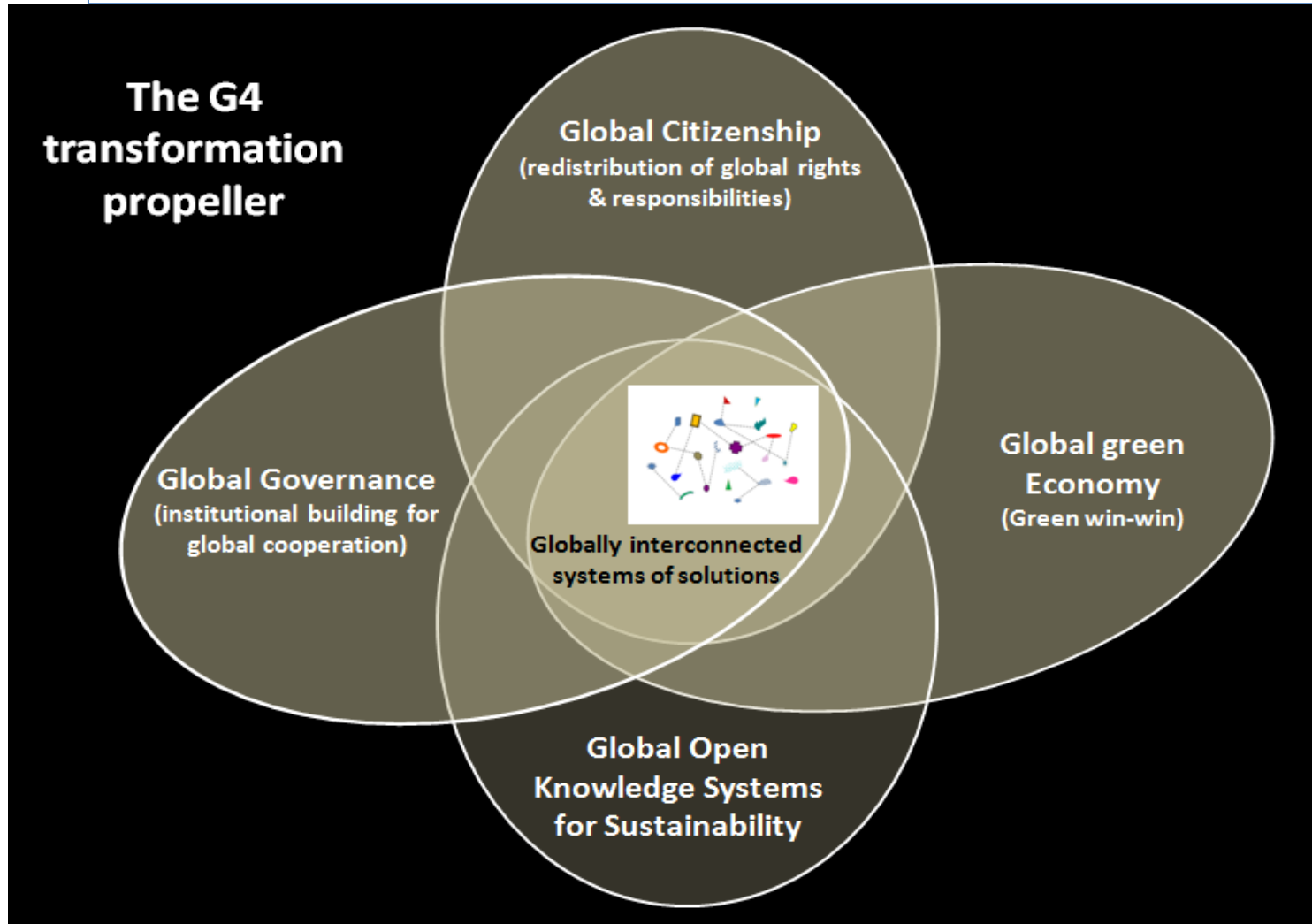
Moving from representational tools & methods to Transformative ones



\* By coordinating solutions which work at various scale levels;  
[www.gsdp.eu/nc/workshops](http://www.gsdp.eu/nc/workshops) ;  
[blog.global-systems-science.eu/](http://blog.global-systems-science.eu/)

\*\* Tàbara 2011

### 3. Most important transformative forces are social forces, not climate driven



Innovative climate strategies and solutions can take advantage of, and support, a number of global transformative forces already evident outside of the climate domain.



# Back to the three messages...

1. **Conventional climate assessment approaches face severe limitations** to develop adequate strategies and solutions to cope with High-End climate change. **New transformative tools and methods are required** -and some already available.
2. **New approaches integrating science and policy for transforming global climate governance are needed:**
  - **Integrated Climate Governance**
  - **Global Systems Science**
3. **Most transformative forces** to cope with High-End climate change **are social forces, not climate-driven**. Innovative climate strategies and solutions could take advantage of, and support, a number of global transformative forces already evident **outside of the climate domain** (the G4 transformation propeller).

**So...** 

# A final remark:

## Learning to create narratives of hope

1. **Hope is necessary to drive action.** But hope, in order to avoid disillusion, needs to be validated from many practical experiences based on what works in practice for people around the world (The 4G Transformation Propeller...)
2. **A cultural change is also required, because our main boundaries are not only biophysical but mostly cultural and social.** Sustainability learning is required to change our current culture, as sustainability can only be learned not imposed.
3. **Transformative Climate Science** (e.g. developing ICG & GSS) **can support such global sustainability learning** - and in this sense, constitutes a narrative of hope in itself.

# Thank you for your attention...

## The G4 transformation propeller

