Planetary Condominium

The Earth System Accounting Framework (ESAF)

Draft Guidelines

COMMON
HOME
OF HUMANITY

Why Draft Guidelines?

01

- The Legal instrument and the ESAF will ultimately have to be approved by the member countries of the UN

- This is a draft, opening the discussion

  → Intentionally poor on managerial details and formulas, focusing instead on principles and requirements for efficiency and effectiveness in the management of the condominium.

Planetary Boundaries and Quotas, Pressures

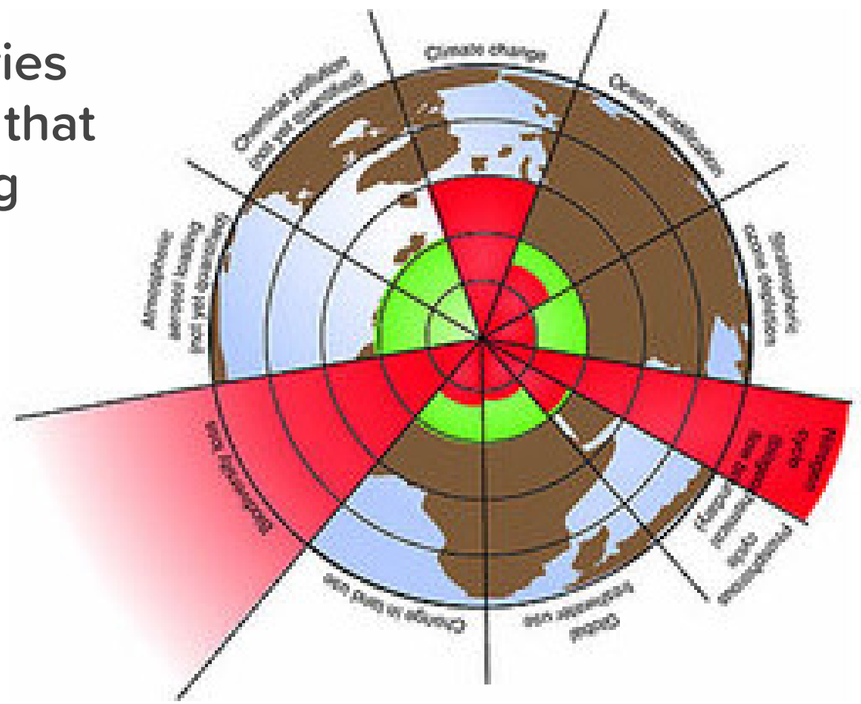
02

- The 9 Planetary ***Boundaries*** define an end goal – environmental limits within which the risk of irrevocably changing the Earth system is low.

  → But they do not tell us what to do to return to or stay within the safe operating space

- The 10 Planetary ***Quotas*** are a translation of the Planet Boundaries that show the limits for the pressures (natural as well as human) that would allow us to return to and operate within the safe operating space.
- ***Pressures*** mostly correspond to levels of human activity in the DPSIR (Driver–Pressure-State-Impact-Response) accounting framework as defined by the European Environment Agency.

  → In most cases they correspond to gaseous emissions, applications (phosphorus and nitrogen), deforestation, etc.



Three critical steps within ESAF

03

ACCOUNTING → FAIR DISTRIBUTION OF RIGHTS → INCENTIVE SYSTEM

- **ESAF application in real cases will show problems of**
  - data availability and quality, and of
  - tricky behavioural adaptations to play the incentives

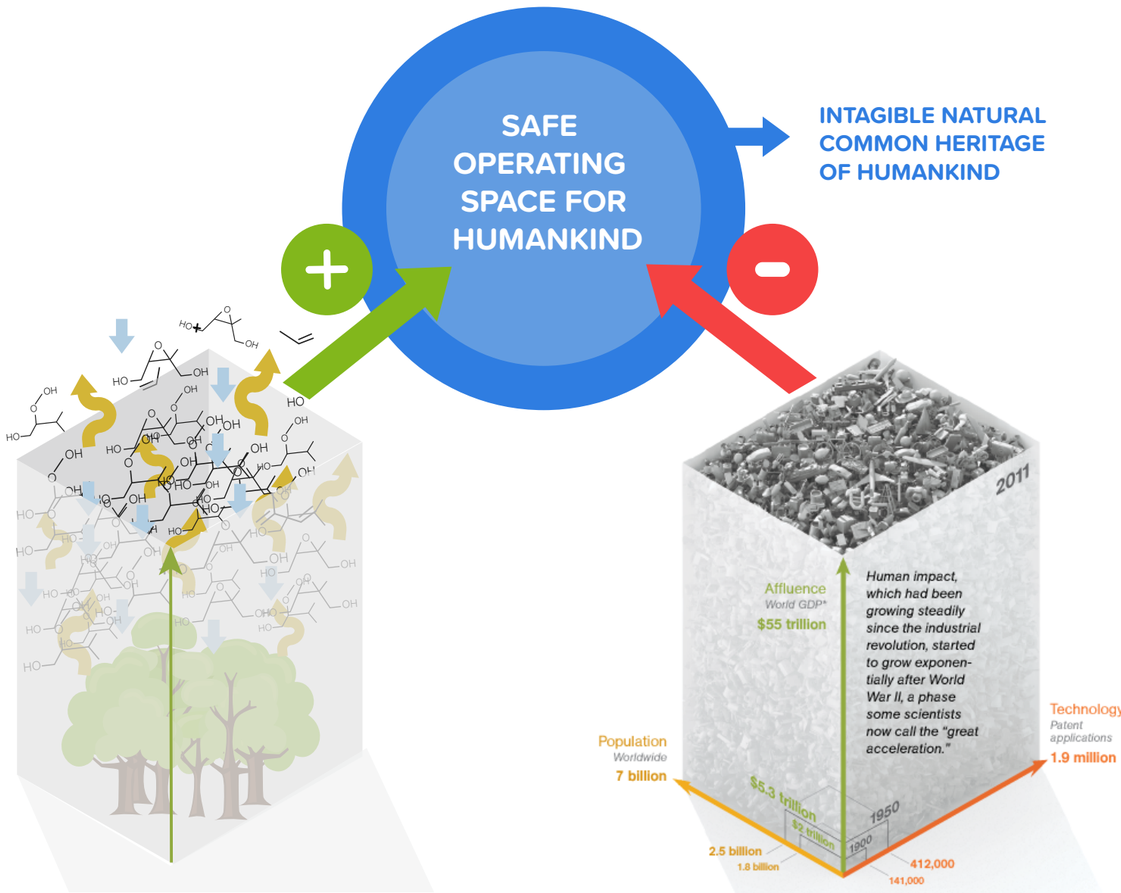
- **Time is not available to wait for the perfect sets of data and incentives**
  - Work with the data, humans and organizations that we have!
  - And learn by doing, introducing cyclical improvements in the data used and in the rules of the game

Dynamics of Global Quotas (I)

04

- In each of the dimensions of the Planetary Quotas there can be
  - ***negative*** pressures (detrimental to the Safe Operating Space) and
  - ***positive*** pressures (favourable to it).

- Pressures of both signals can be generated
  - ***by nature*** (greenhouse gas emissions from volcanic activity and climate regulation from tropical forests, for instance) as well as
  - ***by human activity*** (e.g. greenhouse gas emissions from food production and transport, and intervention in biological cycles for absorption of greenhouse gases).



Dynamics of Global Quotas (II)

05

- **We must evolve from “What is” to “What should be”**

  → A transition period is required to support the evolution of the current status towards the target quota (corresponding to the Safe Operating Space).

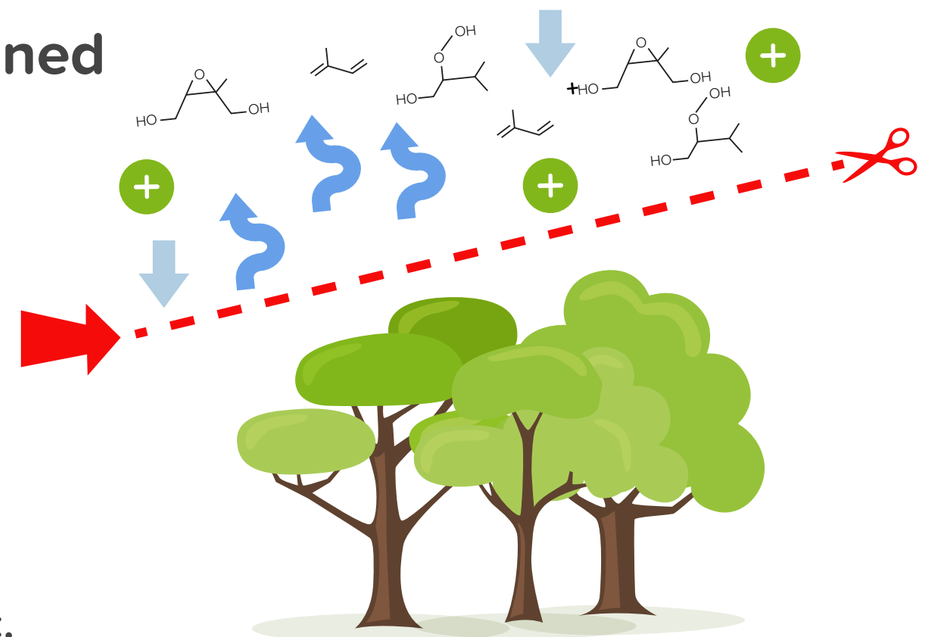
- **A transition curve for each global quota must be defined taking into consideration:**

  → the physics of the underlying processes and the associated ***urgency***;

  → the ***inertia*** of human (social, economic and political) systems;

  → the possibilities opened by ***technical progress*** both to lower negative pressures and to increase positive pressures

  → the capacity of ***natural or man-made regeneration of ecosystems*** and the improvement of the maintenance of the associated biogeophysical cycles.nitrogen), deforestation, etc.

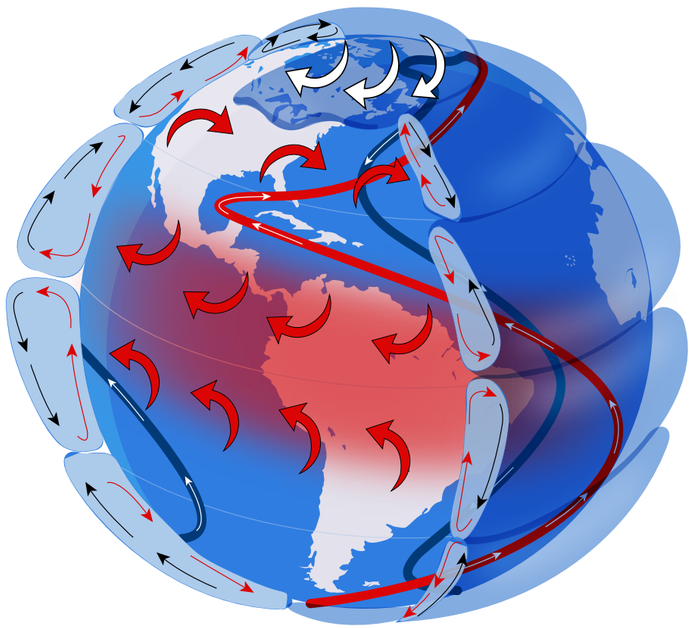


From Global Quotas to National Budgets (I)

06

- **A transition period must also be defined and accepted for the distribution of the global quota across countries, defining national quotas as percentages of the global quota.**

  → Again, from “What is” to “What should be”



- **A fair allocation of quotas to countries at the end of the transition period requires a metric**

  → This can be based on population, on population with some correction for GDP or HDI, physical constraints or some other metric.

  → An early agreement on this metric is important.

- **The transition period for the distribution of national quotas may be the same or different from that applied to the global quotas;**

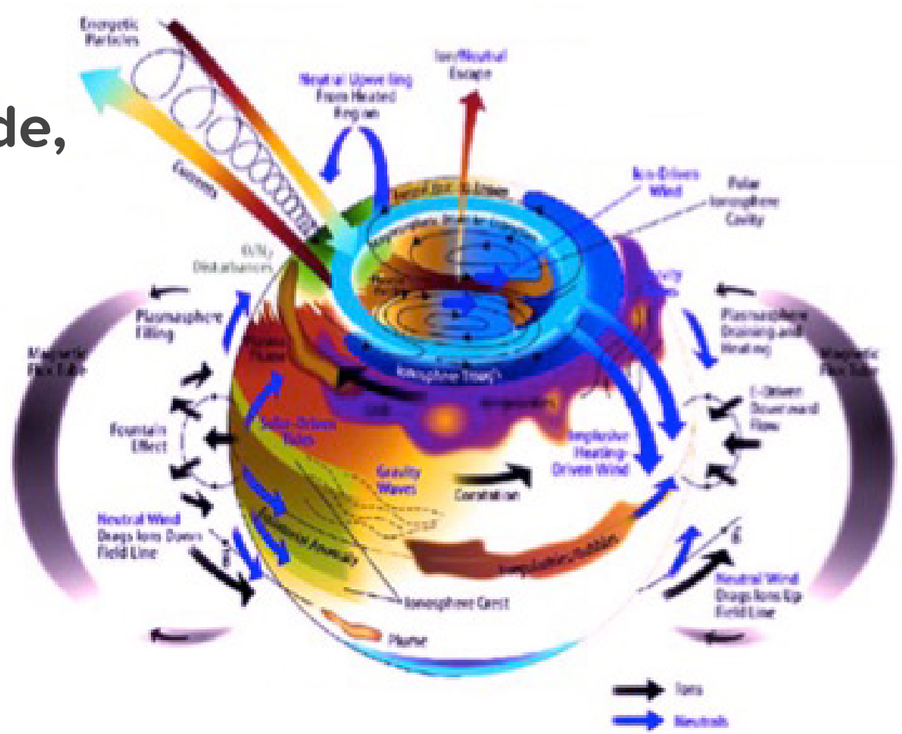
From Global Quotas to National Budgets (II)

07

- **Each country must be responsible for negative and for positive pressures exerted on the state of the Earth System in its own territory.**

- **Regarding human activities, two accounts will be made,**

  - one based on consumption of goods and services (including the transport of those goods along their value chain);
  - and another on production of goods and services.



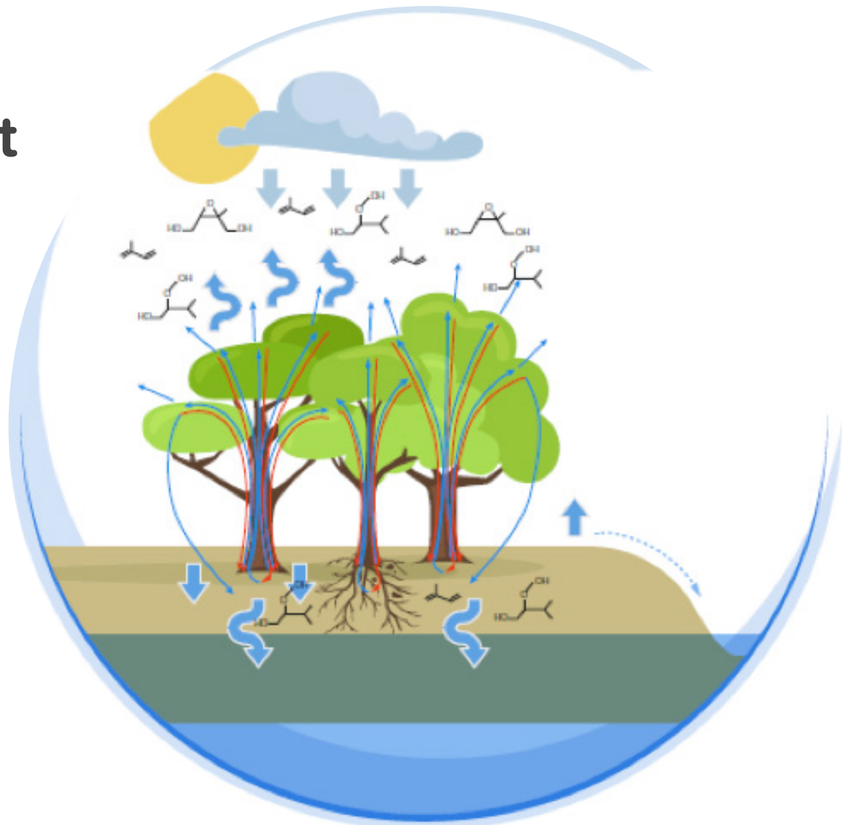
Pressures generated by the natural infrastructure

08

- **Pressures generated by the natural infrastructure in a national territory must be under the responsibility of that country insofar as they are manageable**

  → both for positive and for negative pressures.

- **Non-manageable pressures generated by the natural infrastructure in national territories, as well as those generated by ecosystems in international spaces (deep sea, polar ice caps, ...) will be taken into account for the global quota and deducted from it before its distribution across countries**



Different conditions for different Boundaries

09

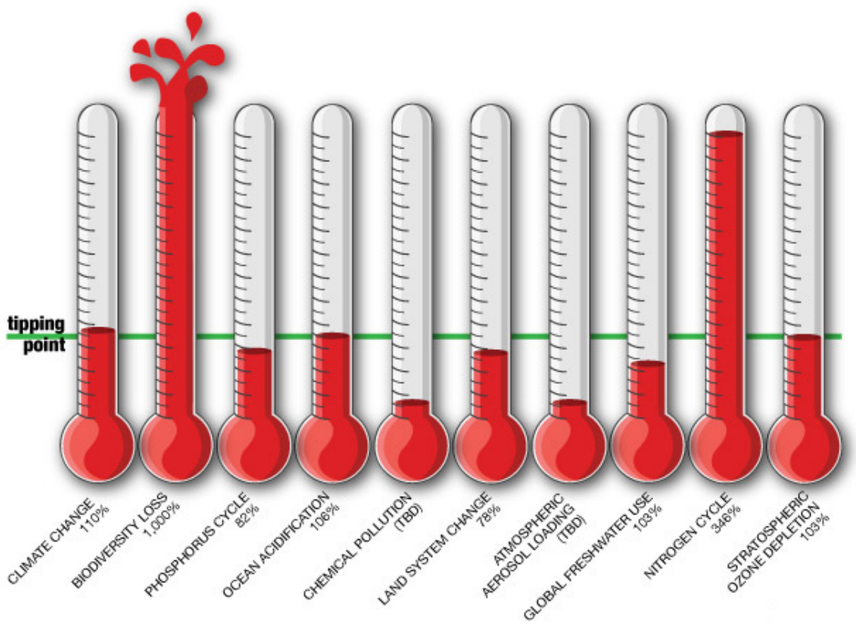
- For each Planet Boundary it is important to consider the current value of the corresponding State variable in relation to the Boundary.

- The diversity of those situations allows a simple colour coding system:

  → **Red** for cases already beyond the boundary,
  requiring urgent recovery

  → **Yellow** for cases in a close range of the boundary but still on the favourable side,
  requiring careful management of how the system evolves, trying to induce more positive than negative pressures; and

  → **Green** for cases still far from the boundaries
  No need for global interventions (so far)



- Regulations regimes adopted for each boundary will depend on the applicable colour.

For Red zone cases, the key instrument should be regulation

- **For Red zone cases, the key instrument should be regulation**
  - Setting clear limits on how much negative pressure is possible each year (in a clear decreasing trajectory),
- **Complemented by financial instruments to realign those which exceed their limits and to reward those who generate positive pressures**
  - These instruments decided at the condominium level
  - They should be strong enough to generate quick change of behaviour from the non-abiding countries and their economic agents

(image???)

The Yellow Zone – cap & trade

- **For Yellow zone cases the basic mechanism to stimulate movement towards the stable conditions of the target budgets is cap-and-trade.**
  - Each year, national caps (budgets) are defined (as the product of the global budget by the national percentage, as defined in the transition mechanisms)
  - Countries have the possibility of trading (pressures) among themselves

- **Bilateral trade in a certain pressure dimension between countries is only enough when the sum of their pressures is lower than the sum of their national budgets.**

A hypothetical example of cap-and-trade in a single pressure dimension

		Countries		
	Pressures	**U**	**V**	**Total**
Natural Sourcing	Positive	40	80	120
	Negative	-10	0	-10
Human action	Positive	0	0	0
	Negative	-80	-20	-100
	Global presure	-50	60	10
	Quota	-30	-15	-45
	Internal Balance	-20	75	55
	Traded	20	-20	0
	Final Balance	0	55	55

- In this case country U has a negative internal balance (-20), while country V has a positive internal balance (75)
- Since the sums of those balances is positive, country V can “cover for” country U by trading in 20 budget units
- Compensation is most likely done via payment from country U to country V (price freely established between them)

The Yellow Zone - cap & trade, possibly across pressure dimensions

- **The cap-and-trade system requires rules of accounting and transparency agreed by all at the outset, and proper records of how much progress towards the total budget is being made**
  - No other interference from the condominium manager, the terms of that trade (in money, in kind or a mixture of the two) are to be established by the parties.
- **Some countries will be above their national budget in some of these dimensions and below in others.**
  - Some specialization of countries with regard to pressure dimensions is acceptable
  - A cross-dimension trade – even if conceptually more complex – could make sense as a very efficient way to stay below the global caps in most (or all) dimensions

(image???)

A hypothetical example of cap-and-trade in a single pressure dimension

		Countries & Presssure Dimensions		Countries & Presssure Dimensions	
	Pressures	**U/A**	**V/A**	**U/B**	**V/B**
Natural Sourcing	Positive	40	80	120	20
	Negative	-10	0	-20	-10
Human action	Positive	0	0	15	5
	Negative	-80	-20	-40	-70
	Global presure	-50	60	75	-55
	Quota	-30	-15	-40	-20
	Internal Balance	-20	75	115	-35
	Traded	20	-20	-35	35
	Final Balance	0	55	80	0

- **In this case countries U and V have inverse situations in relation to pressure dimensions A and B**
  - But in both dimensions their sum is within the budget
- **Country U can "import" 20 positive units in dimension A and "export" 35 positive units in dimension B.**
  - For country V the flows are symmetrical
- **The terms of the deal are defined bilaterally, namely whether there is some monetary (or other) component to be exchanged besides the direct trades of A and B**
  Further trade of remaining positive balances would be possible with other countries

The Yellow Zone – A Price when cap & trade is not enough

- **It is clear that for several Planet Boundaries in the Yellow Zone the cap-and-trade could not be enough to achieve the desired progress of the global budget.**

- **In such cases a price per unit of the corresponding pressures (beyond what was achieved by cap-and-trade) must be established at such level that it *induces* the necessary changes to bring the global budget into the desired trajectory.**

  → This price must be established at the condominium level, on the basis of the best scientific, economic and behavioural knowledge available.

(image???)

A hypothetical example of insufficient cap-and-trade across two pressure dimensions

		Countries & Presssure Dimensions		Countries & Presssure Dimensions	
	Pressures	**U/A**	**V/A**	**U/B**	**V/B**
Natural Sourcing	Positive	40	80	30	20
	Negative	-10	0	-20	-10
Human action	Positive	0	0	15	5
	Negative	-80	-20	-40	-70
	Global presure	-50	60	-15	-55
	Quota	-30	-15	-40	-20
	Internal Balance	-20	75	25	-35
	Traded	20	-20	-25	25
	Final Balance	0	55	0	-10

- **In this case countries U and V have inverse situations in relation to pressure dimensions A and B**
  - Their sum is within the budget in dimension A, while it is not in dimension B
- **Country U can “import” 20 positive units in dimension A and “export” 25 positive units in dimension B.**
  - For country V the flows are symmetrical
- **The terms of the deal are defined bilaterally, namely whether there is some monetary (or other) component to be exchanged besides the direct trades of A and B**
- **But country V has to pay a price for the remaining negative pressure above the budget (-10)**
  - Or find another country able to absorb it

Using the revenue from the Price system

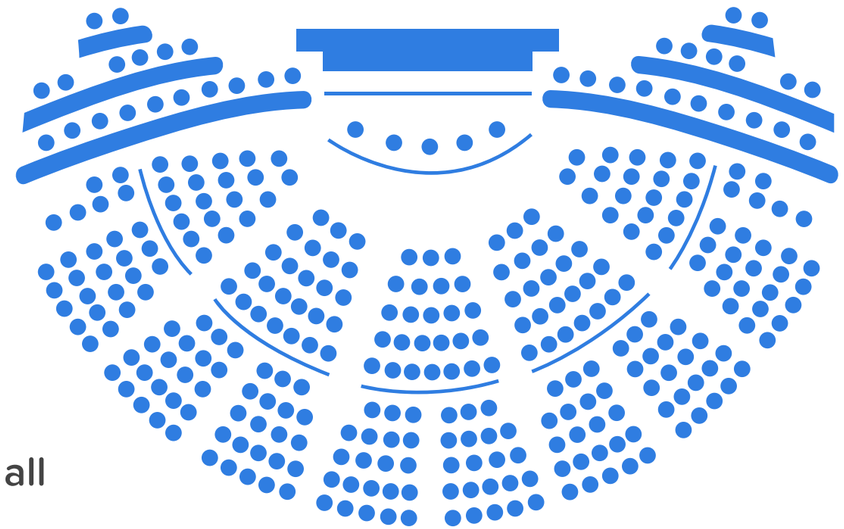
- **When the price regime is triggered (both for Red Yellow zone cases), payments should be made to the UN agency managing the condominium.**
- **The corresponding revenue could be used to support investments with the highest expected return in terms of progress towards the budget**

(image???)

- **Those investments could be of two different kinds:**
  - On technologies or management practices that would enhance positive pressures or reduce negative pressures.
    - The technologies thus developed would enjoy open access by all countries
  - On regeneration of particular ecosystems (critical biomes).

Urgency and Trust

- **This process is of vital importance for life on Earth as we know it, and thus to all its inhabitants and countries.**
  - For several Planet Boundaries the point of irreversible change is very near
- **Structural conditions needed to build confidence are known:**
  - Any successful management of the commons requires a congruence between appropriation rules and provision rules.
  - The introduction of the positive pressures in a global system of accountancy is a structural condition required to create a system where all participants feel that their own interests are safeguarded, as well for shifting the dominant rule of destruction and consumption.
- **Another structural condition for a collective action to become possible is HOPE in the possibility of a successful outcome, with positive impacts for all participants.**
  - An accountancy system is required where all the core drivers that determine the state of the Earth System are included, opening the door for a possible successful solution.




Thank You for your attention !