

Fair and Equitable Sharing of Deep-Seabed Mining Royalties



Dale Squires, Presentation to International Seabed Authority Finance Committee, June 20, 2025

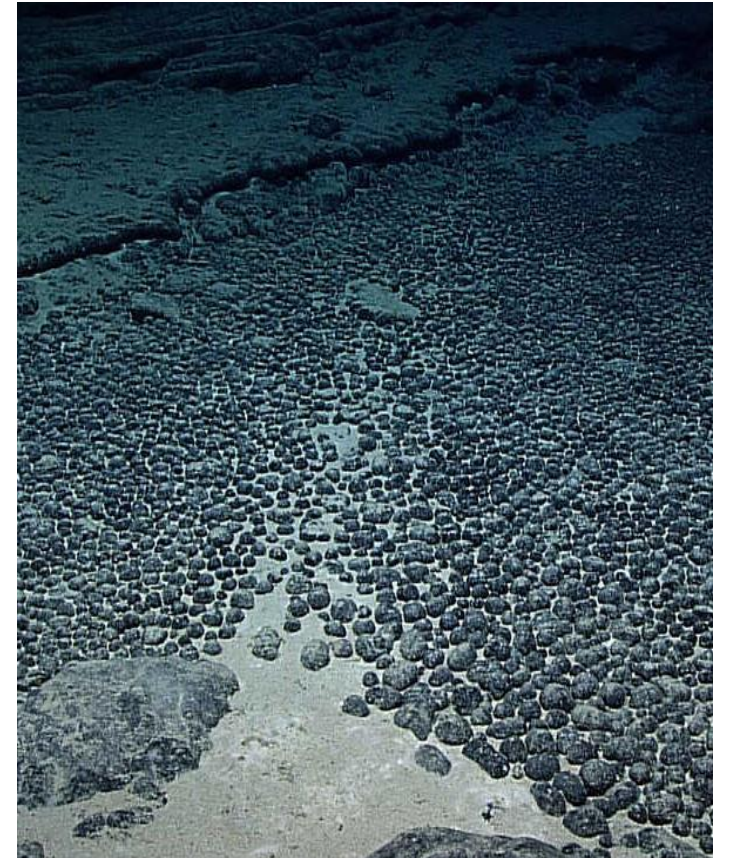
Disclaimer

- Based upon Report to the ISA Finance Committee, 2025.
- The views are exclusively those of the author.



Essential Questions

- How should deep-seabed mining royalties be fairly and equitably shared intra-generationally and/or inter-generationally?
- Always within a sustainable development framework.
- Mining draws down natural capital of minerals and environment to create royalties to:
 - (1) Use now through intra-generationally sharing royalties to States Parties
 - and/or
 - (2) Inter-generationally sharing by investing royalties now in Common Heritage Fund to create global public goods through focused projects of human, produced, and other natural capital and higher future consumption
- If intra-generational, what is preferred fair and equitable sharing rule?
- If inter-generational, how to implement inter-generational equity and sustainable development and what are the best uses of the Common Heritage Fund?



Report Recommendations to Keep in Mind

- Reasons developed below
- Use overall framework of sustainable development
- Do not distribute royalties intra-generationally for consumption now
 - Recommend (for the record) a preferred sharing rule if you prefer to distribute and consume now
 - Even if do not use
- Distribute royalties into Common Heritage Fund
 - Invest now rather than consume now to create greatest social welfare for humankind over time
 - Implemented through focused projects
 - Implements inter-generational equity, fairness, and justice
 - Implements sustainable development and Sustainable Development Goals
 - Creates global public goods otherwise under-provided, if at all
 - Especially benefits under-served and vulnerable States Parties through focused public goods

Organization

- 1. Common Heritage of Humankind
- 2. Equity
- 3. Equality of What: Two Currencies of Justice
- 4. Fairness as Impartiality and Justice
- 5. Basis of Sharing: Claims, Priority, and Equity Principles
- 6. Intragenerational Allocation Formulae for Royalty Shares
- 7. Inter-Generational Equity and Sustainable Development
- 8. Common Heritage Fund
- 9. Summing It All Up



1. Common Heritage of Humankind (CHH)



Principle of Ethics and International Law

- Essential element of UNCLOS.
- Exclusively applies to resources which lie in areas beyond national jurisdiction:
 - Area for deep-seabed minerals
- Creates Area as 'regulated common property' owned by 'all humankind'



Humankind and Regulated Common Property

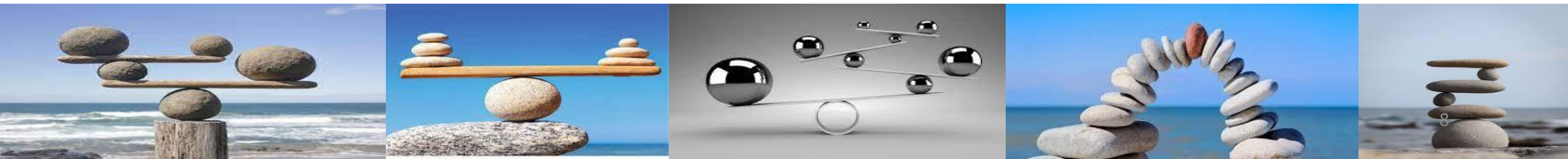
- Define 'humankind' or 'humanity' or 'mankind' as:

Legal cosmopolitan individuals of current and future generations that reside in ISA States Parties regardless of citizenship

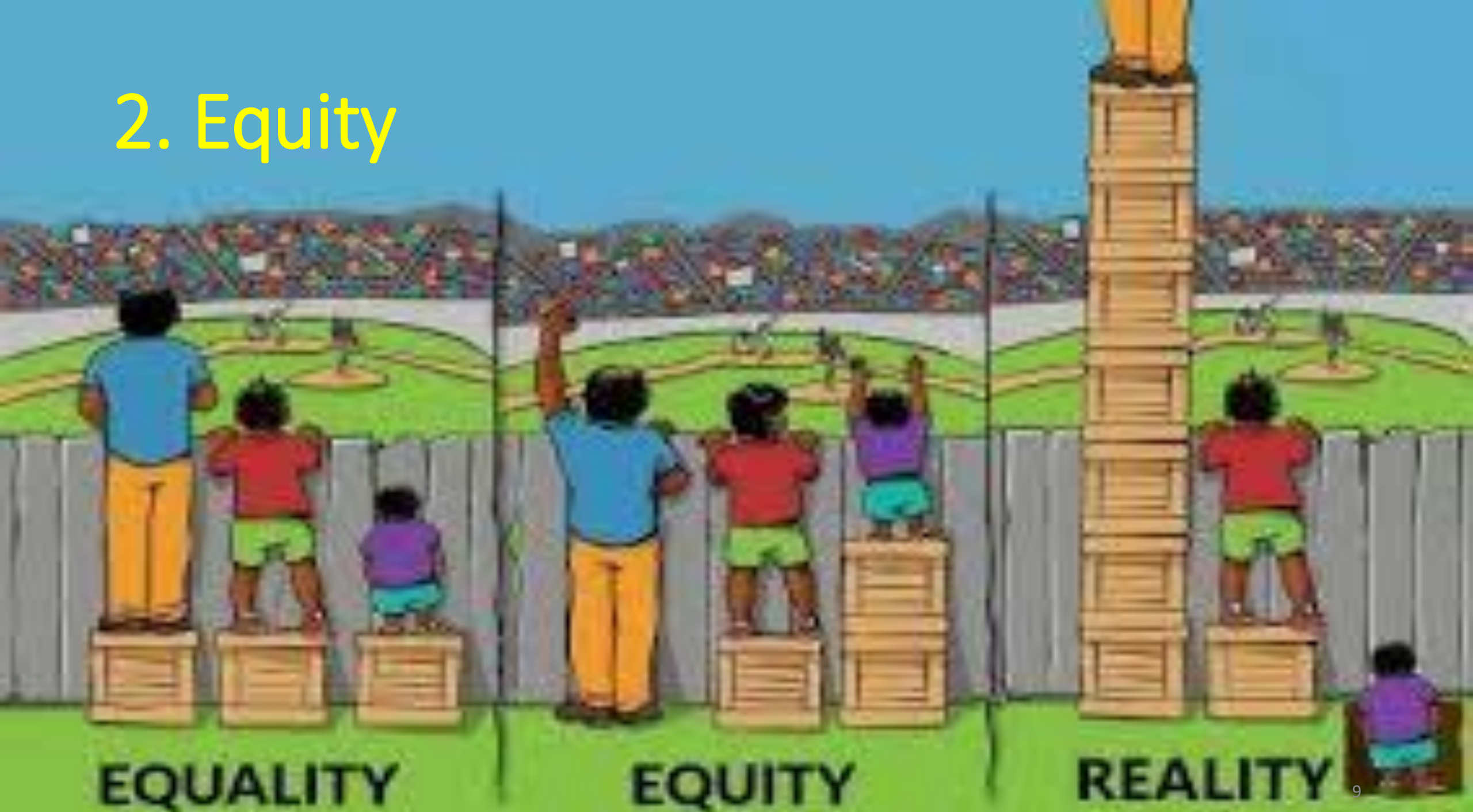
- *kosmopolitês*, 'citizen of the world'
- Public international law recognizes international legal personality of States
 - Extended to CHH and 'humankind' as derived (secondary) subjectivity and legal personality but subordinate to ISA States Parties
- In sum, UNCLOS and CHH establish deep-seabed minerals in the Area as regulated common property owned by current and future generations of legal cosmopolitan individuals and managed by ISA

Balance Conflicting Claims of Cosmopolitans with States

- Must balance due to their conflicting rights, entitlements, and claims to benefits.
- Cosmopolitan individuals' collective ownership of Area common property gives every individual (of current and future generations) equal ownership rights, entitlement, and claim to benefits
- Individual States Party to ISA have primary subjectivity and legal personality under public international law
 - Gives each State equal rights and standing in ISA
 - Benefits are distributed to cosmopolitans through their States Parties
- Balance individuals and States Parties by combining different equity principles and different mathematical formulae for sharing rules



2. Equity

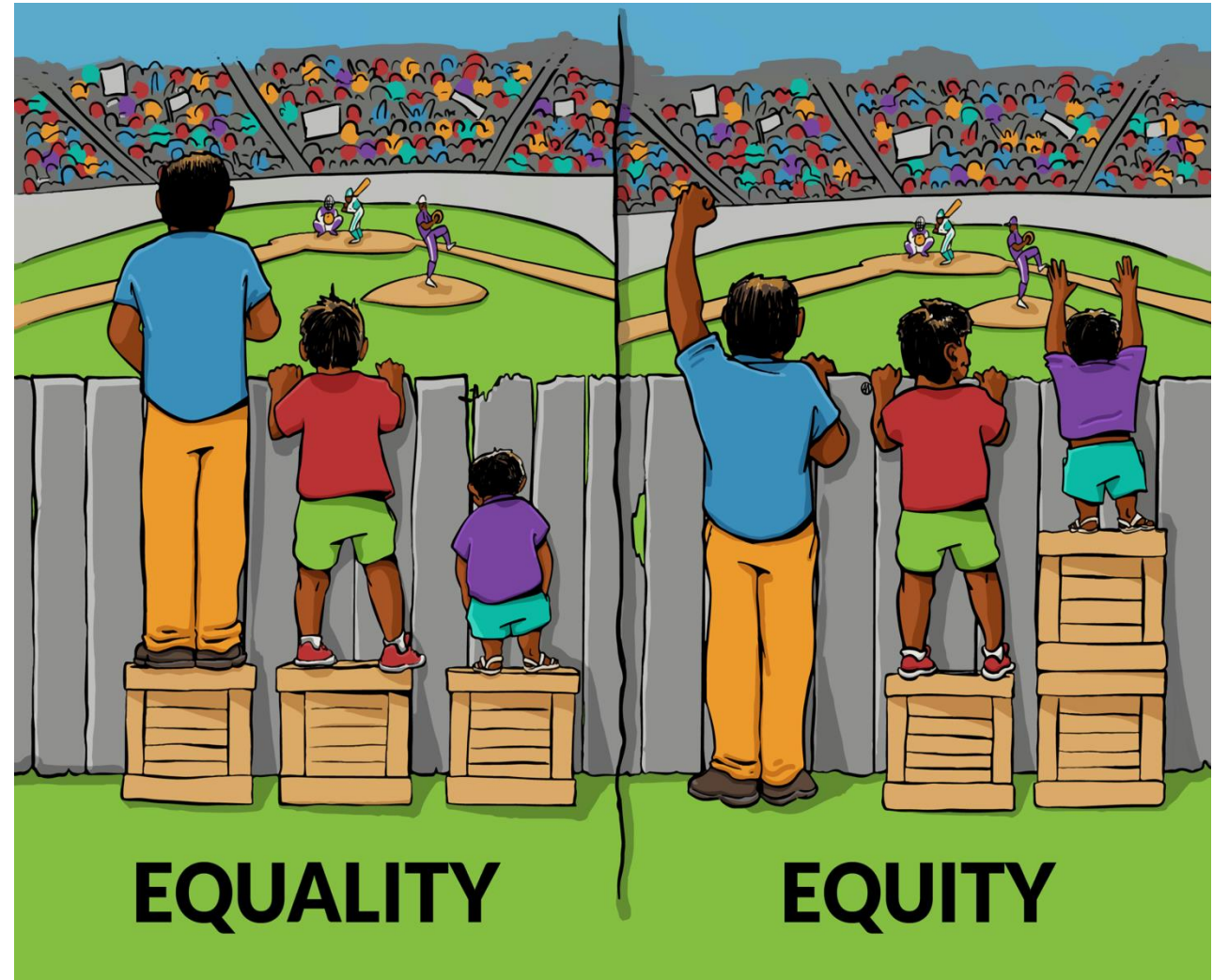


Why Are Definitions of Equity and Fairness Important?

- Article 140: The Authority shall provide for the **equitable sharing** of financial and other economic benefits derived from activities in the Area through any appropriate mechanism, on a **non-discriminatory basis**, in accordance with article 160, paragraph 2(f)(i)
- Article 82: The payments or contributions shall be made through the Authority, which shall distribute them to States Parties to this Convention, **on the basis of equitable sharing criteria**, taking into account the interests and needs of **developing States, particularly the least developed and the land-locked among them**.
- **Non-discriminatory basis = fairness as forms of impartiality ('parties that look alike are treated alike').**

Equitable Sharing Criteria

- UNCLOS Articles 82 & 140 mandate
- Equity is both intra-generational and inter-generational.
- Equitable differs from equality.
- Definition of equity used is relative inequality aversion:
- How much States Parties dislike inequality in the distribution of resources, income, wealth, or policy impacts – here deep-seabed mining royalties.



Equity, Fairness, & Justice

- Equitable sharing definition used is 'equalize the playing field' through addressing unequal access to opportunities.
- To participate in deep-seabed mining and enjoy the rewards.
- In process, will establish procedural and distributive justice through 'realization focused comparative' justice

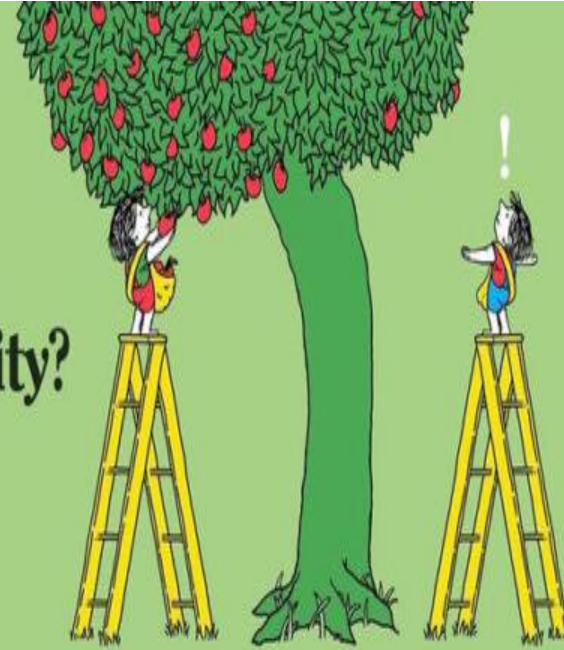
Inequality

Unequal access to opportunities
Fairness Concept



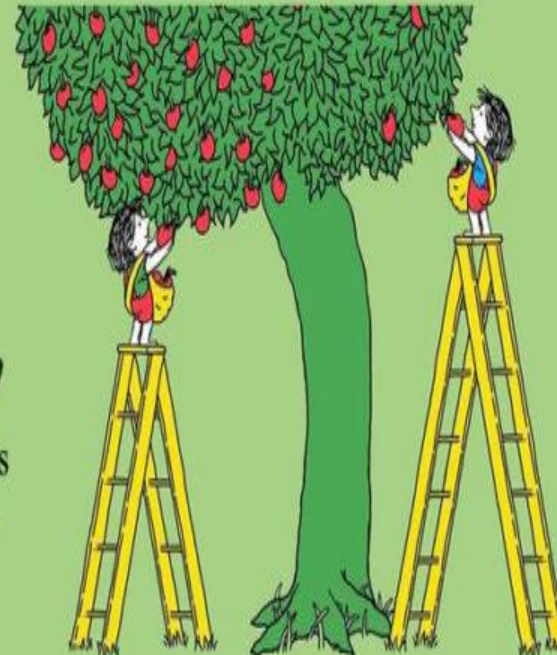
Equality?

Evenly distributed tools & resources



Equity

Custom tools that identify & address inequality



Justice

Fixing the system to offer equal access to both tools & opportunities



Inter-Generational Equity

- Principle of fairness between generations.
- Ensures that current generations meet their needs without compromising that of future generations.
- Core concept of sustainable development.
- Developed more below.



3. Equality of What? Two 'Currencies of Justice'



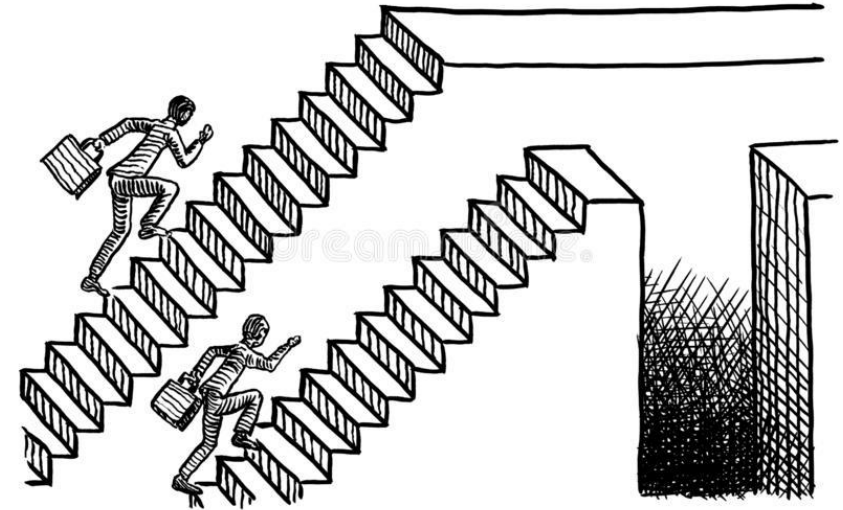
Equality of What?

- ‘Equality of What’ or two ‘currencies of justice’:
- (1) Equality of Outcome EO
- (2) Equality of Opportunity EO_p
 - Inequality of Opportunity IO_p
 - One definition of fairness from before
- Distinguish between fair (justifiable) and unfair (unjustifiable) inequality



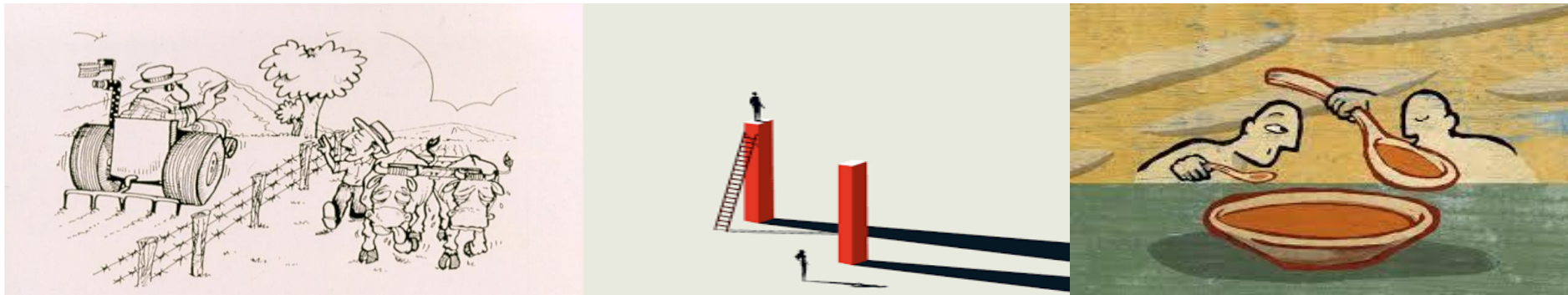
Inequality of Opportunity IO_p

- Outcome inequalities are unfair if rooted in circumstances beyond cosmopolitan individual's control or responsibility
 - Unfair inequality
- Humankind (cosmopolitans) should have the same chances to participate in deep-seabed mining and enjoy benefits, regardless of their socioeconomic background, State of birth, or other circumstances
- Once opportunities to reach an outcome have been equally allocated, which particular opportunity the individual chooses lie outside of scope of justice
 - Fair inequality



Ex-Ante Compensation for Cosmopolitan Individuals

- Inequality due to circumstances beyond individual's responsibility or control should be eliminated or compensated.
- 'Level the playing field' but not 'leveling down'
- IO_P is a fairness criterion



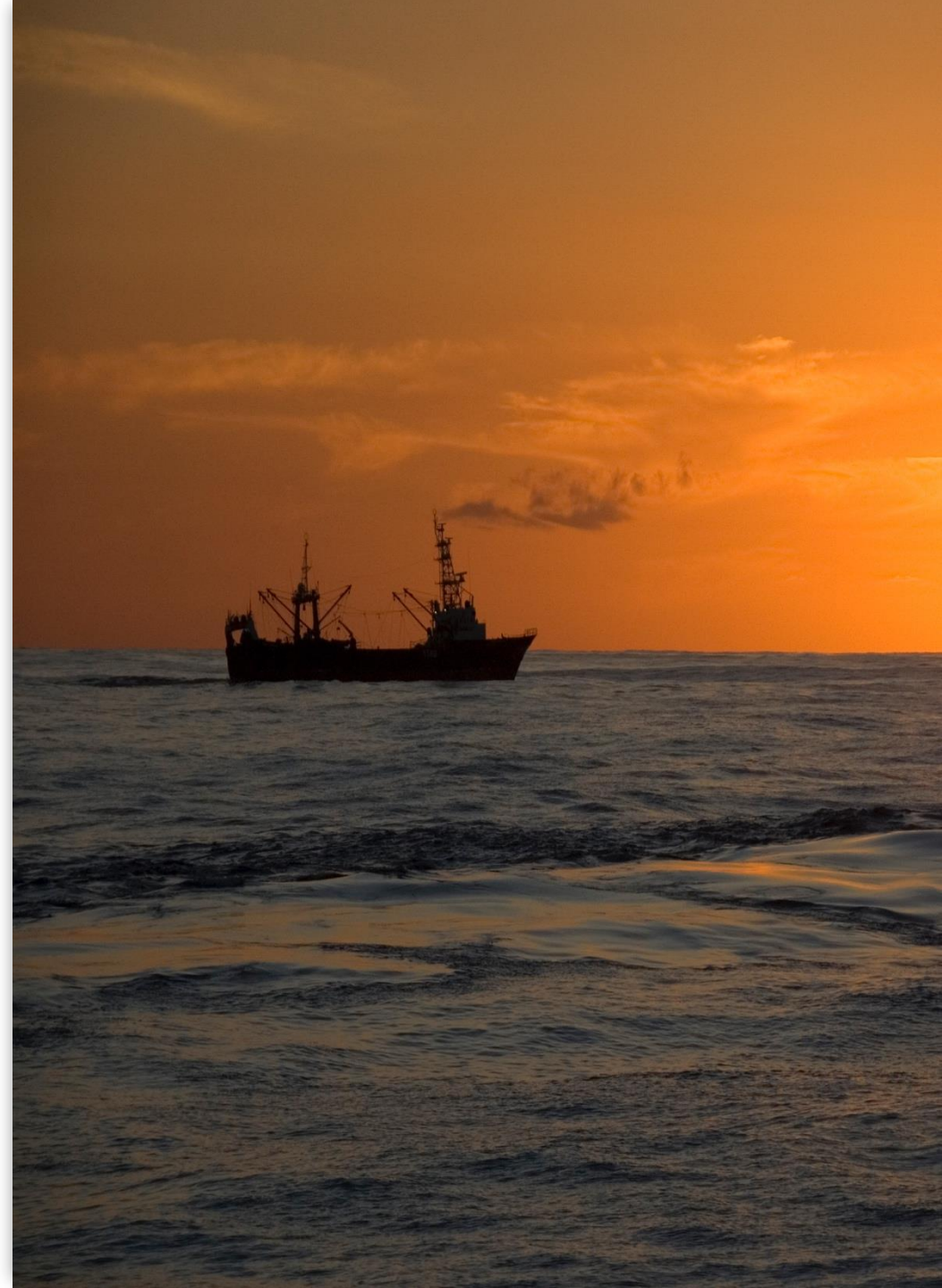
IO_P One of Two Rationales for Sharing

- Following Wulfrum's (1983, pp. 321-322) interpretation of CHH, UNCLOS-mandated equity in distribution is (*ex-ante*) compensation for inequality of opportunity to participate in deep-seabed mining.
- "Thus, the receipt of revenues was to be regarded as a form of indirect participation in deep seabed-bed mining or, in other words a sort of compensation which – as all States enjoyed equal rights with respect to the seabed -- constituted the right of the respective non-mining States."
- Wulfrum, Rudiger. 1983. "Principle of the Common Heritage of Mankind." *Zeitschrift für Ausländisches Öffentliches Recht und Völkerrecht* 43:312-337.



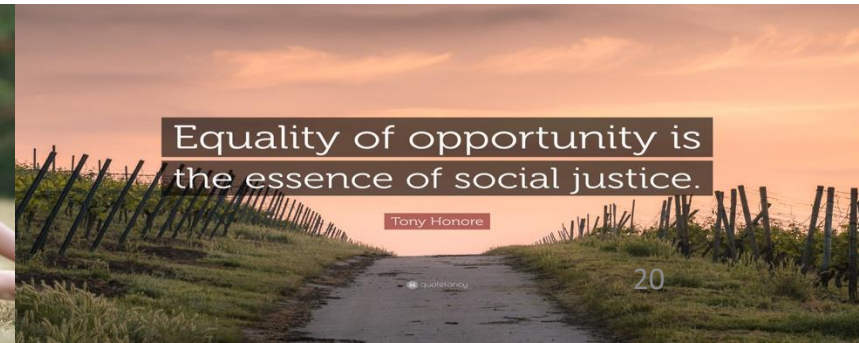
Three Ways to Implement IO_p & UNCLOS-Mandated Equity in Distribution

- Enterprise and Common Heritage Fund are two intergenerational ways.
- Third is intragenerational royalty sharing rule redistribution mechanism from lower to higher inequality of opportunity States Parties representing their cosmopolitans.
- All three are forms of fairness.



How to Redistribute Royalty Shares in ISA Sharing Rules?

- Not practicable to lump-sum tax higher-income States Parties to intragenerationally *ex-ante* compensate lower-income States Parties (representing their cosmopolitans).
- Use EO and EO_p distribution weights to implicitly tax and (*ex-ante*) compensate developing-State cosmopolitans for their inequality of opportunity to participate in deep-seabed mining.
- Distribution weights increase or decrease royalty share to implement UNCLOS-mandated equitable distribution (for developing-States Art 82) and thus Area-owning cosmopolitans ('Humankind').

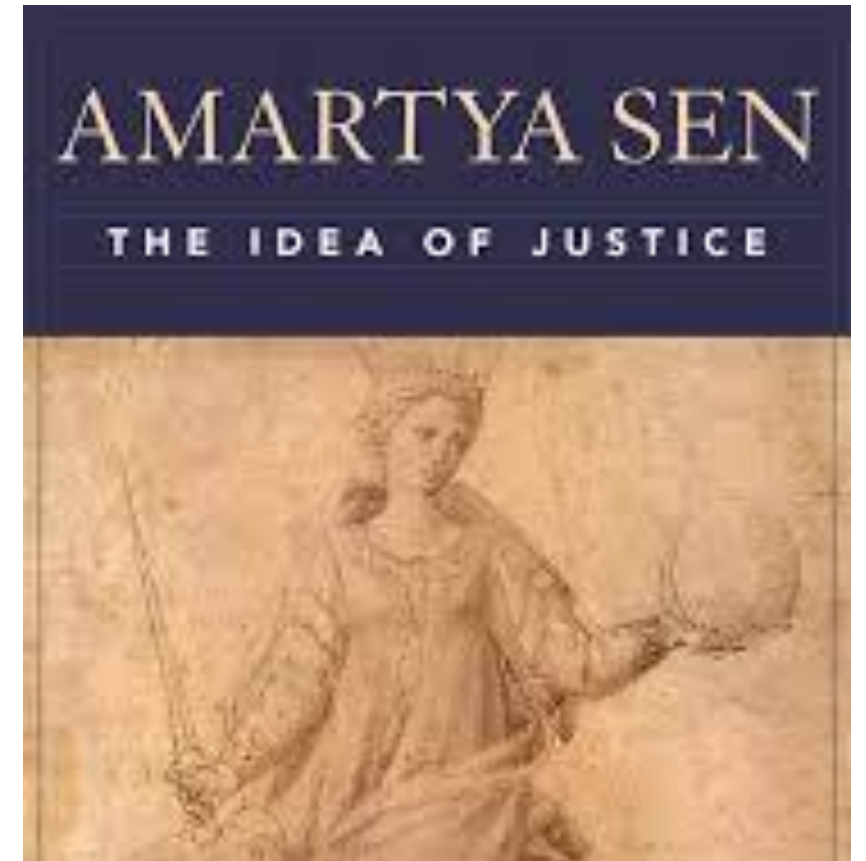


4. Fairness and Justice



Fairness as Impartiality

- Impartiality is central to fairness, although its manifestations vary by context (Sen 2009).
- In international organizations, fairness hinges on impartial processes where rules are consistently and equally applied to each and all parties.
- Impartiality equally treats equals, balancing procedural rigor (e.g., impartial sharing rules) and distributive justice (e.g., benefit-sharing via fair division principles and equality of opportunity).



Fair Bargains: Second Approach to Fairness and Impartiality

- First approach to fairness was redistribute royalty shares from lower to higher inequality of opportunity States Parties
- Now second approach to fairness through fair bargains and impartiality
- ISA voluntary, democratic, consensual decision-making potentially gives 'fair bargains'
 - Equal treatment for States Parties equals
- Fair bargains give impartiality
- Royalty shares allocated to ISA States Parties can potentially be fair shares



Open Impartiality: Third Approach to Fairness

- Fair bargains, impartiality, democratic consensual decision-making, organizations open to all parties, and organizations' deliberations as structured deliberative process and 'open public reasoning' across borders are consistent with 'open impartiality' (Sen 2009).



Realization-Focused Comparative Justice

- A practical approach to justice that:
- 1. Compares actual outcomes (realizations) rather than idealized institutions, societies, or world order.
- 2. Prioritizes reducing manifest injustices (e.g., inequality) over defining a perfectly just society or world order.
- 3. Uses public reasoning and democratic deliberation to resolve conflicts, emphasizing feasible improvements.

Equity, Fairness, and Justice Summary to This Point

- **Equity and Equitable**

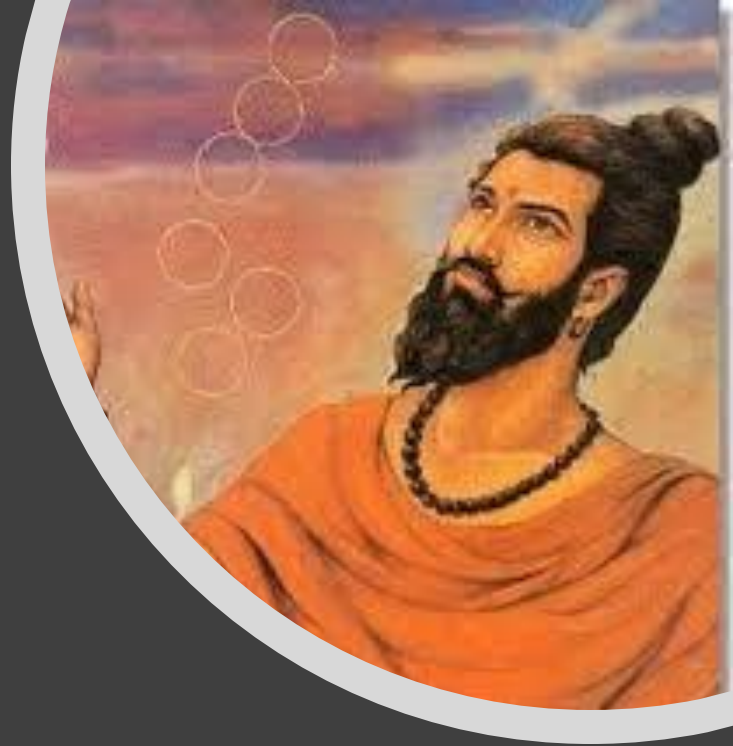
- (1) Relative inequality aversion both intragenerational and intergenerational
- (2) Intergenerational equity through sustainable development implemented through Common Heritage Fund

- **Three Approaches to Fairness**

- (1) Address inequality of opportunity
- (2) 'Fair bargain' decision-making process giving impartiality (non-discrimination)
- (3) 'Open impartiality' through democratic consensual decision-making, organizations open to all parties, and organizations' deliberations as structured deliberative process and 'open public reasoning'

- **Justice**

- (1) Realization-focused comparative justice



5. Basis of Sharing: Claims, Priority, and Equity Principles



Basis of Sharing: Claims, Priority, and Equity Principles

- Cosmopolitans' claim on, and entitlement to, royalties stem from cosmopolitans' collective ownership of the Area.
- States Parties represent current and future generations of cosmopolitans' ownership royalty entitlement and claims.
- Represented by each States Party's share (%) of total population.

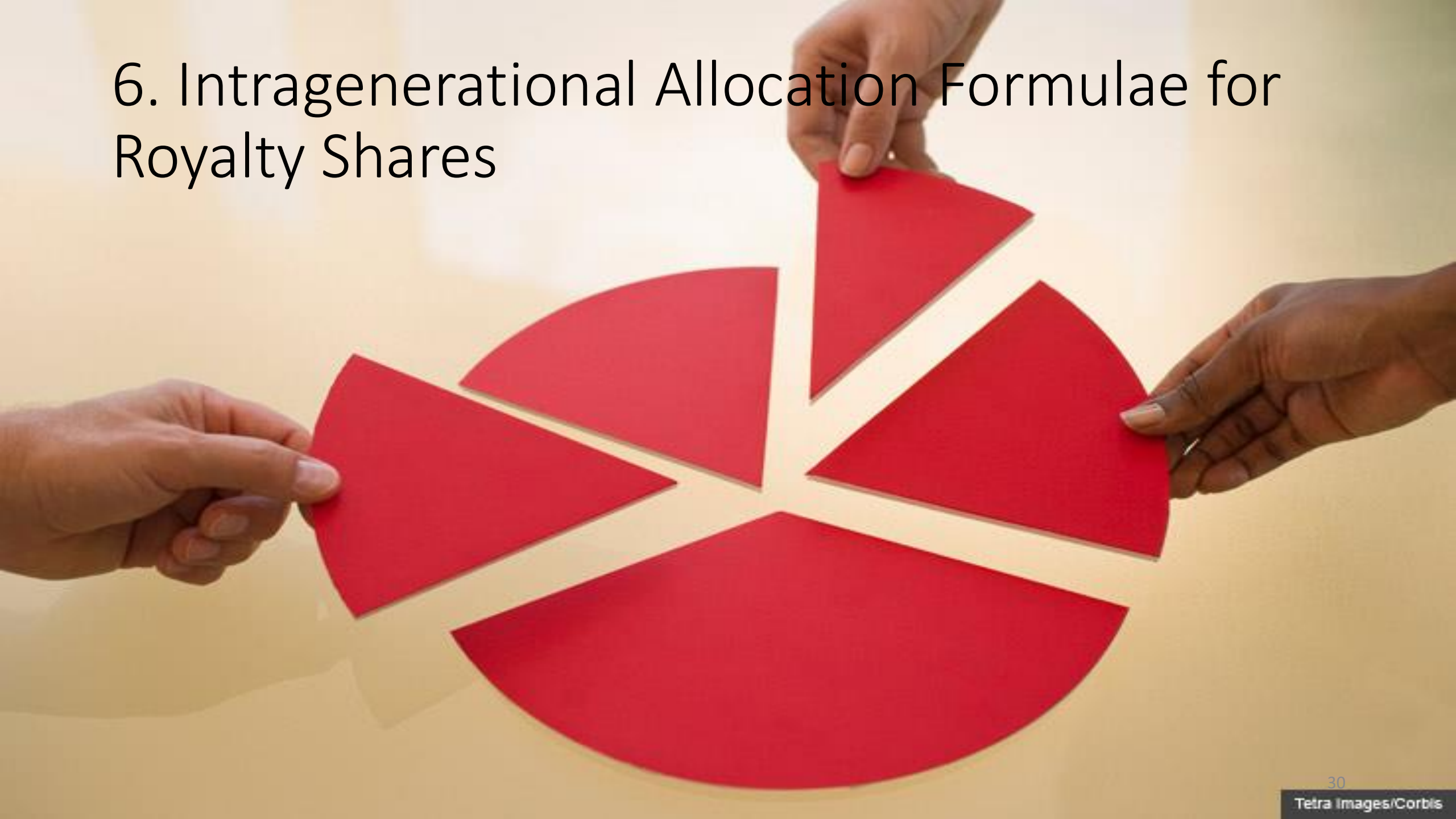


Balance States Parties with Cosmopolitans (Humankind)

- Sharing rule formulae incorporate States Parties' population shares for cosmopolitans, inequality of opportunity redistribution through distribution weights, UN Multidimensional Vulnerability Index
- IO_P weights based on per capita GNI and hence also addresses developing States Parties
- Alternative formulae evaluated for Equality of Outcome royalty share distribution among States Parties
 - Equal division for States Parties

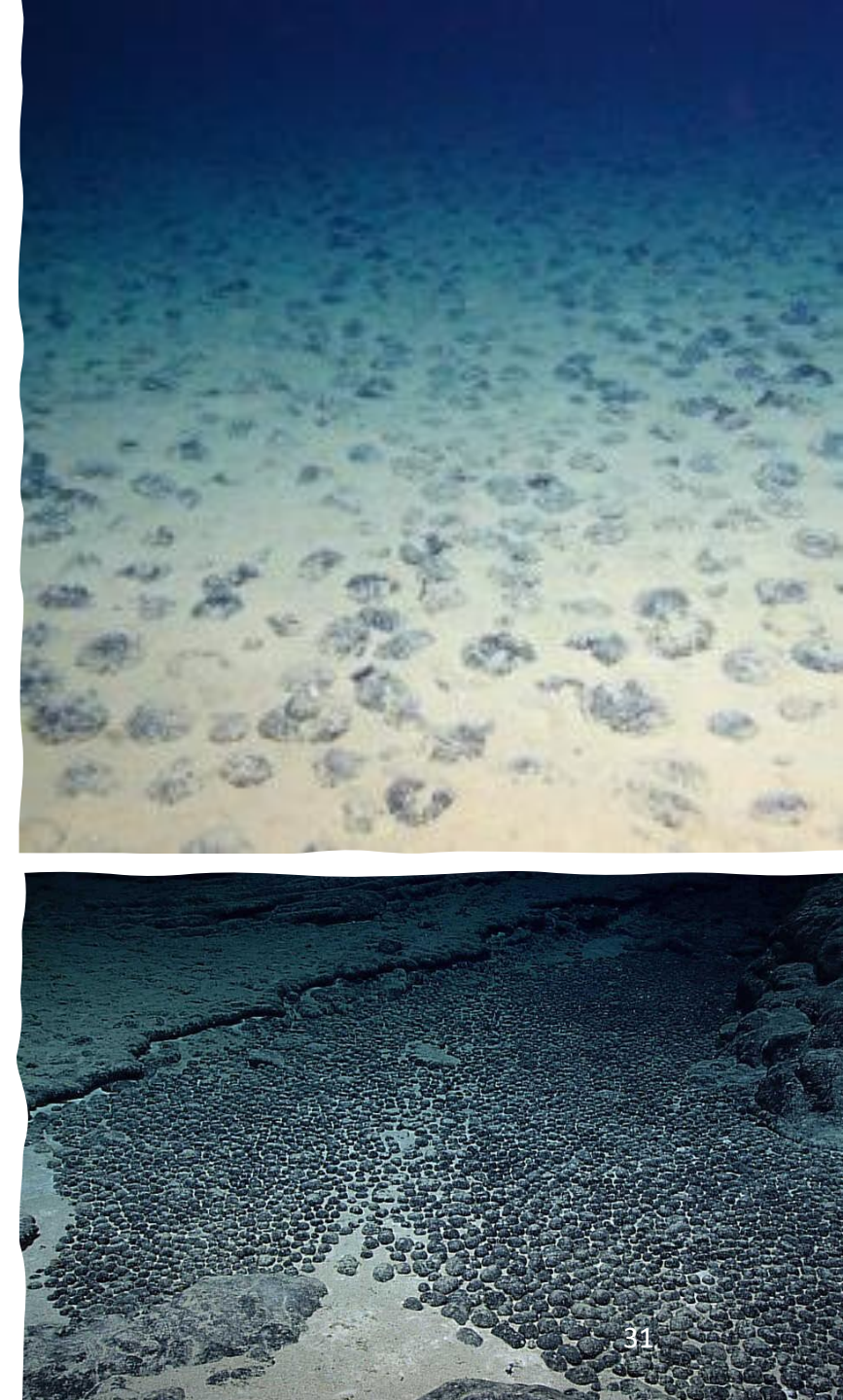


6. Intragenerational Allocation Formulae for Royalty Shares



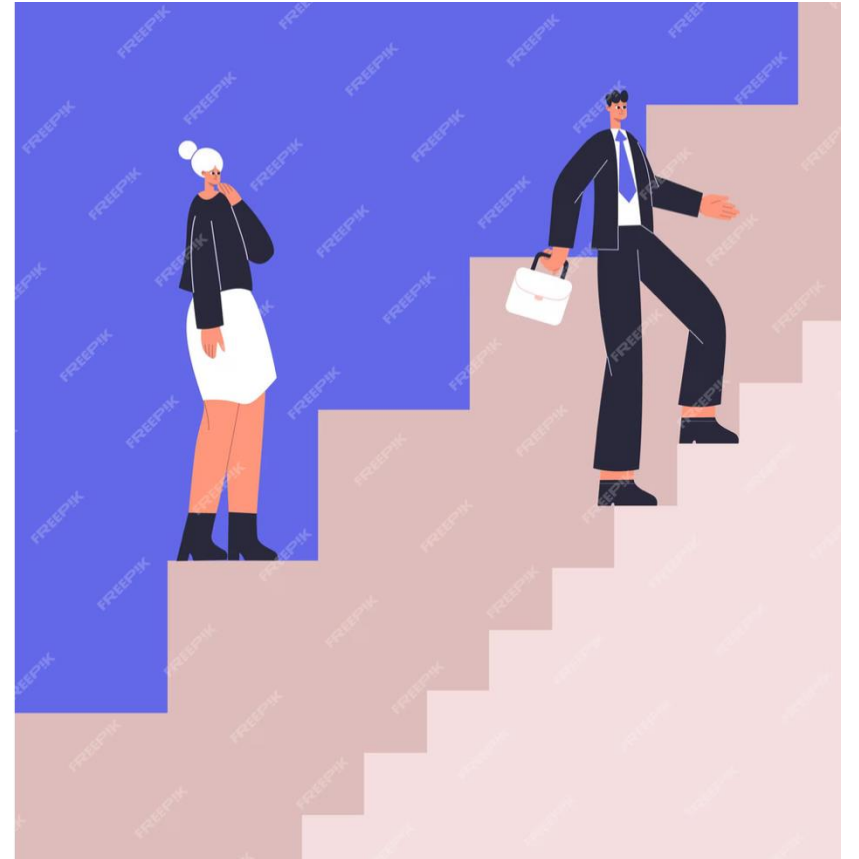
Three Variables in Sharing Rules

- Each States Party's population share of all ISA States Parties representing cosmopolitans
- UN Multidimensional Variability Index
- Distribution weight to redistribute royalty shares from higher to lower inequality of opportunity States Parties
 - Also addresses developing States Parties since based on comparing unfair per capita GNI to mean per capita GNI



Balance Cosmopolitans (Humankind) with States Parties

- Sharing rule formulae redistribute royalty shares from lower to higher inequality of opportunity States Parties.
- Alternative formulae evaluated for Equality of Outcome royalty share distribution among States Parties.



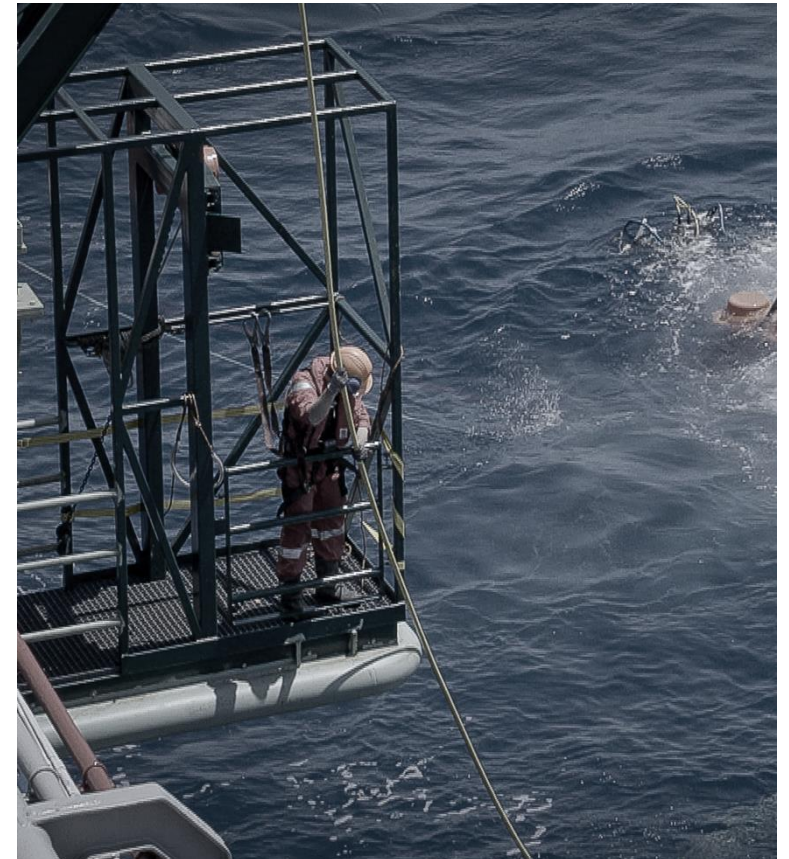
Shares are Efficient

- Each formula is Pareto-efficient
- Because a reallocation from one States Party to another requires a loss by the relinquishing States Party



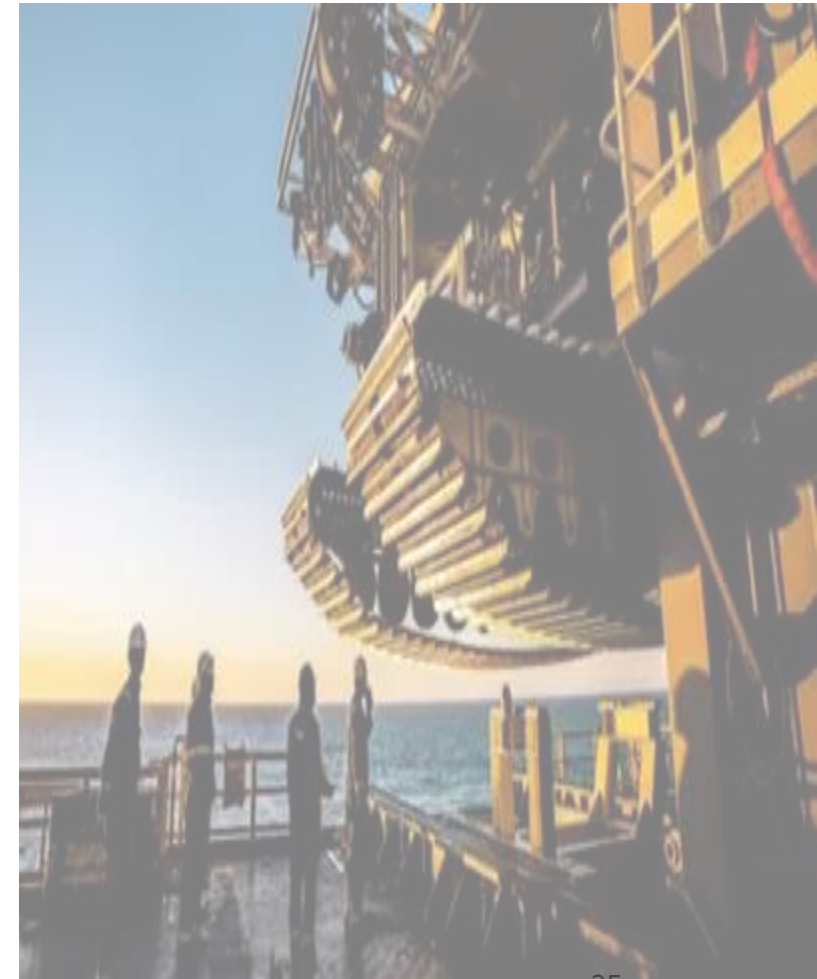
Summary of Results

- All formulae gave very close results in Equality of Outcome for States Parties.
- One formula is recommended for inequality of opportunity approach
 - Direct Unfairness:
 - $\text{unfair per capita GNI} / \text{mean unfair per capita GNI}$
- Equality of outcome approach could be intuitively appealing
 - $[\text{Mean per capita GNI} / \text{per capita GNI}]^n$
 - But inconsistent with Wulfrum's CHH definition



Summary of Results

- Following slides demonstrate that amount received by States Parties with this sharing rule is so small as to be ineffectual.
 - Uses Direct Unfairness:
 - unfair per capita GNI / mean unfair per capita GNI
- These small amounts represent consumption from depleting exhaustible natural capital of minerals and environment
- Precludes sustainable development and intergenerational equity.



Distributed \$500 Million to States Parties: Direct Unfairness

Statistic	US\$2023 per States Party	Population (Three-Year Average)	US\$2023 per Capita per States Party
Mean	2,976,191	41,300,000	2.11
Median	2,497,432	7,160,998	0.33
Standard Deviation	2,238,891	15,800,000	7.11
Minimum	138,866	1,817	0.01
Maximum	15,300,000	1,430,000,000	76.43
Skewness	7.718	69.36	7.72

Distributed \$500 Million to States Parties: Direct Unfairness

Three-Year Average 2021 – 2022 - 2023

Six Smallest Total Allocations (All Developing Except One)

Six Largest Total Allocations (All Developing Countries)

Six Smallest US\$2023 per States Party	Six Smallest Population	US\$2023 per Capita per States Party	Six Largest US\$2023 per States Party	Six Largest Population	US\$2023 per Capita per States Party
358,870	33,956	10.57	15,300,000	1,426,000,000	0.01
353,394	17,756	19.90	15,100,000	1,412,000,000	0.01
322,379	11,795	27.33	8,731,063	243,600,000	0.04
301,040	10,000	30.10	8,270,611	223,200,000	0.04
288,643	14,709	19.62	7,875,928	210,300,000	0.04
138,866	1,817	76.43	7,516,845	169,500,000	0.04

Distributed \$500 Million to States Parties: Inverse of Inequality of Opportunity

Statistic	US\$2023 per States Party	Population (Three-Year Average)	US\$2023 per Capita per States Party
Mean	2,976,191	41,300,000	1.61
Median	1,925,277	7,160,998	0.32
Standard Deviation	2,779,993	1.58e+08	5.04
Minimum	95,517	1,817	0.008
Maximum	17,800,000	1,430,000,000	52.57
Skewness	8.09	69.36	617.31

Distributed \$500 Million to States Parties: Inverse of Inequality of Opportunity

Three-Year Average 2021 – 2022 - 2023

Six Smallest Total Allocations (All Developing Countries)

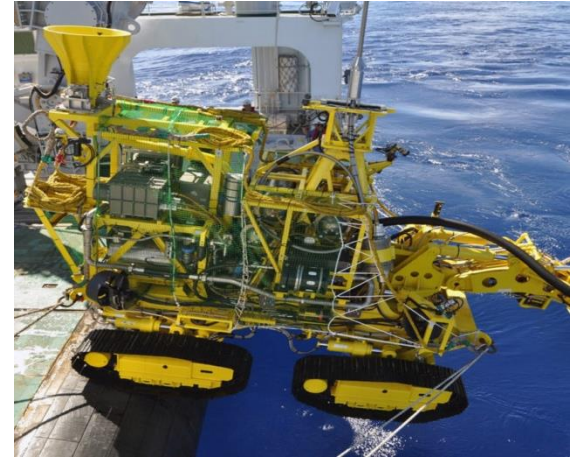
Six Smallest US\$2023 per States Party	Population	US\$2023 per Capita per States Party
244,709	17,756	13.78
221,427	11,795	18.77
192,403	33,956	5.67
192,289	14,709	13.07
146,677	38,804	3.78
95,517	1,817	52.57

Six Largest Total Allocations (Four are Developed)

Six Largest US\$2023 per States Party	Population	US\$2023 per Capita per States Party
17,800,000	1,426,000,000	0.01
12,200,000	2.436e+08	0.05
11,900,000	1.024e+08	0.12
11,800,000	2.232e+08	0.05
10,800,000	1,412,000,000	0.008
8,448,010	49,164,354	0.17

Which Variables in Sharing Rules Are Important?

- Regression analysis of distributed royalty shares upon population share, distribution weights, UN Multidimensional Vulnerability Index and ISA Region dummy (categorical) variables for average marginal impact.
- **Conclusions:**
 - (1) Population share is always several orders of magnitude greater in impact and always positive in algebraic sign and statistically significant.
 - (2) Multidimensional Variability Index, distribution weight, and ISA Regions sometimes positive/negative, sometimes statistically significant/sometimes not.

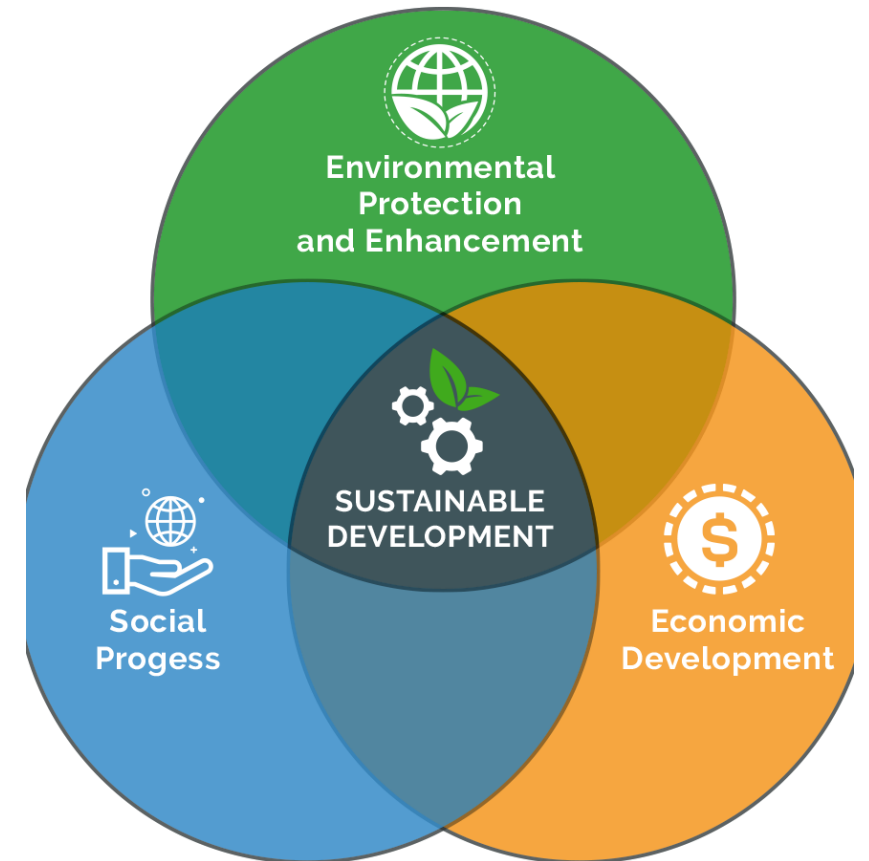


7. Inter-Generational Equity and Sustainable Development



Balance Social, Environmental, & Economic Needs

- Sustainable development balances economic, social, and environmental needs to ensure and balance the well-being of current and future generations.
- Implements inter-generational equity, fairness, and justice



Current and Future Generations

- Sustainable development should satisfy current generation well-being without compromising the well-being of future generations.



Account for All Forms of Capital

- Natural capital of minerals and environment
- Produced: human-made, research institutes, climate mitigation infrastructure, etc.
- Human: skills, education, training, research, capacity development, health, etc.
- Collective value of all capital is called inclusive wealth



Global Public Goods

- In ISA case, all forms of capital are also global public goods
- Global public goods are underprovided for global social welfare





8. Common Heritage Fund

Common Heritage Fund

- Development and Sustainability Fund under auspices of ISA
- Projects through Common Heritage Fund compensate for inequality of opportunity within and across generations giving both intra- and inter-generational equity.
- Without Common Heritage Fund, very difficult to mobilize financial resources for a common purpose.
- Legal Basis: Articles 140(2) and 160(2)(f)(i)
- Comparable Convention on Biological Diversity's Global Biodiversity Framework Fund and proposed Cali Fund.

Objectives

- From: Appendix of ISBA/28/FC/2/Add.1
- Mitigate adverse economic impacts on developing States resulting from the introduction of seabed minerals into global markets.
- Support economic diversification and resilience in resource-dependent economies.
- Promote capacity-building, technology transfer, and participation in deep-sea research and monitoring.
- Contribute to environmental protection and sustainable development in line with the Sustainable Development Goals (SDGs).

Administration

- Administered by a dedicated unit or trust fund mechanism within ISA Secretariat.
- Oversight provided by Finance Committee, with strategic direction from Assembly.



Eligibility

- All developing States Parties to UNCLOS would be eligible to apply for support.
- Priority would be given to:
- Least developed countries (LDCs)
- Landlocked developing countries (LLDCs)
- Small island developing States (SIDS)
- States experiencing demonstrable economic harm from seabed mineral production



Disbursement and Equitable Sharing

- Articles 82 and 140
- Disbursement criteria would be based on transparent indicators such as GDP per capita, commodity dependence, and vulnerability to market shocks.
- Disbursement can use points system to rank projects by equitable sharing criteria if you want to apply this approach
- Weight each disbursement criteria by points, add up points, then rank
- Used for lumpy, indivisible goods and services like organ transplants (e.g., kidneys)



Inter-Generational Equity Through Sustainable Development and Satisfy Sustainable Development Goals

- Draw down natural capital of minerals and related environment and invest royalties into Common Heritage Fund.
- Finances other forms of capital (human, produced, other natural capital) that are global public goods implemented through projects.
- At minimum, maintain overall level of all forms of capital taken together – inclusive wealth



Examples of Potential Public Goods Projects through Common Heritage Fund

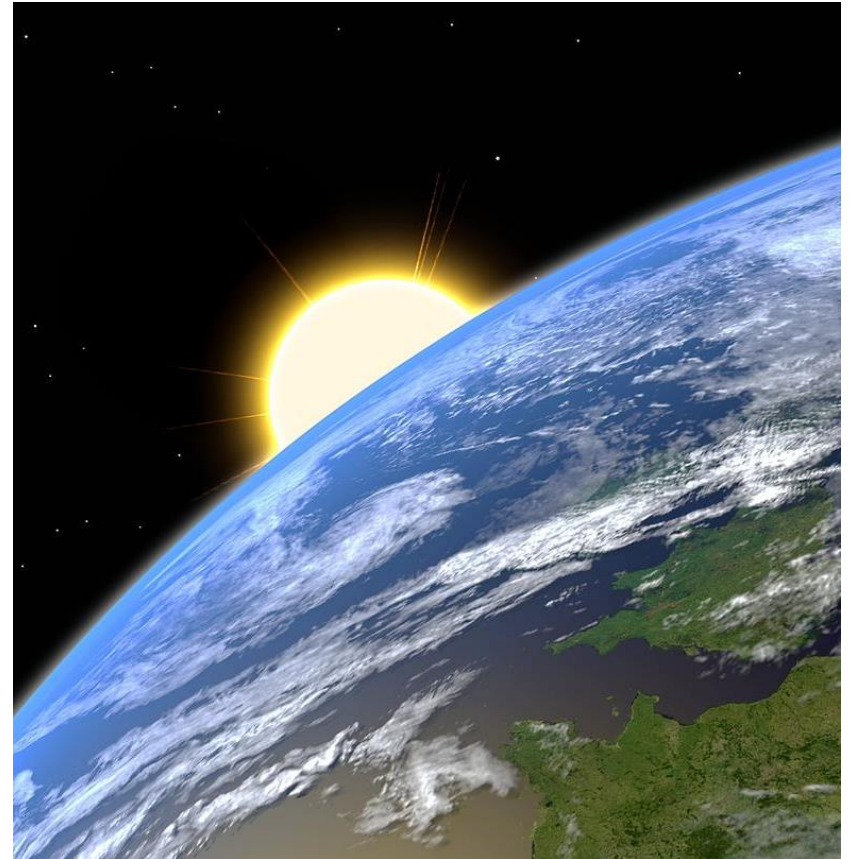
- (Forms of produced, human, other natural capital in sustainable development)
- From appendix of ISBA/28/FC/2/Add.1
- See *ISA Technical Report 31*
- Scientific research & research infrastructure
- Capacity development, training
- Climate change adaptation and mitigation, especially for low-lying coastal and small island developing States Parties
- Leverage funds by partnering with other institutions, e.g. GEF, CCF, World Bank, Nippon Foundation, Nature Conservancy
- Sufficient funds for regionally focused public goods that have real impact
- Rehabilitated or protected other natural capital (outside of immediate area of mining)
- Funding of research into Best Available Techniques and Best Environmental Practices for the restoration and rehabilitation of the Area.

9. Summing It All Up



Your Decision: Current Consumption versus Sustainable Development through Common Heritage Fund

- Consume now through intragenerational royalty sharing
- Don't allocate now but instead invest royalties into Common Heritage Fund to implement fair and equitable intergenerational sharing, sustainable development, & SDGs
- Invest in projects for global public goods of human, produced, other natural capital



Pros and Cons of Intragenerational Distribution

Pros

- Consume and/or invest now and hence benefit now.
- Investment now could also be in public goods of produced, human, other natural capital

Cons

- Opportunity cost of foregone investment in Common Heritage Fund and hence investment opportunities (through projects) in public goods of produced, human, other natural capital
- Small amounts distributed relative to populations for States Parties
- Negligible benefits since most States Parties receive such small amounts in total and per capita.
- Temptation for these small amounts to be put into each States Party's consolidated revenues and not used the way contemplated in the Convention

Pros and Cons of Intergenerational Distribution

Pros

- Implement sustainable development through Common Heritage Fund
 - Global public goods (produced, human, other natural capital) counterbalance loss of natural capital of minerals and environment
- Rather than small, ineffective amounts of money disbursed to individual States Parties, projects of enduring, regional benefit supported.
- Implement intergenerational equity.

Cons

- Opportunity cost of small foregone total and per capita consumption and/or investment now.

Recommendation

- Use overall framework of sustainable development
 - Balance current consumption and/or investment versus Common Heritage Fund and inclusive wealth
- Do not distribute royalties intra-generationally for consumption and/or investment now
 - Recommend (for the record) a preferred sharing rule if you prefer to distribute and consume now
 - Direct Unfairness: Unfair per capita GNI / Mean Unfair per capita GNI
 - Even if do not use
- Distribute royalties into Common Heritage Fund to implement sustainable development, SDGs, and inter-generational equity, fairness, and justice.
- Provide otherwise underprovided global public goods through projects that satisfy objectives from Appendix of ISBA/28/FC/2/Add.1 discussed earlier.
 - Benefits under-served and vulnerable States Parties through focused public goods.

Inequality

Unequal access to opportunities



Equality?

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Thanks!.....Questions?

Equity

Custom tools that identify & address inequality



Justice

Fixing the system to offer equal access to both tools & opportunities

