Global balance and the environment-development feedback loop

Disruptive feedback loops between environment and development are currently a threat, but constructive loops can be leveraged to restore global balance

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In 2016 a new era has started for development, with a new Agenda that will set the course until 2030, building on the previous international framework, the Millennium Development Goals. The latter, a list of 8 objectives, gave way to a more articulated architecture: 17 goals, specified in 169 sub-targets, and subjected to a monitoring through a set of quantitative indicators. Yet, the more complex articulation is only the surface of a deeper revolution in perspective; the true novelty in the 2030 Development Agenda is that it reflects a new intuition about the world we live in: global balance.

Compared with the past, the 2030 Development Agenda is characterized by three main features:

- its development goals are qualified as sustainable,
- it shifts the perspective of one-way aid - from the "rich" to the "poor" - to the horizon of a shared interest to better develop together; and, fundamentally
- it suggests that the goals are interconnected and synergic.

Environment has proven the game changer. Besides the fact that 4 out of 17 goals directly refer to the health of the ecosystem, the inclusion of the environment further implies all the advancements in perspective. Introducing the environment is different from considering another supplementary set of goals, rather meaning that classical development goals have to be redefined within a reactive system that surrounds us, the grid of relationships and balances that shape the broader system we belong to: one that is common and therefore has to be managed together; and one that, like a home a family shares, has to be kept in balance in all its elements, both human and structural. In this sense, the 2030 Agenda exceeded its highest ambitions: it ended up being more than a roadmap for poorer communities bridge the gap, rather looking like a new economy, shaped by new values, for the whole of mankind and its home planet.

Mankind vibrates for achievements

that rhyme with an ever growing change we call progress, expansion, growth. Instead, with few exceptions, we value balance as a viable condition but not as a goal: it is in this sense, for instance, that balance is a concern in economy or in strategic doctrines. Otherwise, we take balance for granted, especially when it refers to a stable and predictable ecosystem: with natural balance mainly preserved by the biosphere since the onset of the agricultural revolution, we tended to take it for granted, neglecting that without balance we cannot achieve growth or expansion – it is impossible to structure a stable society and progress without relying on expected natural cycles which are the expression of balance. Even worse, we tended to conceive balance as a static condition and therefore as inhibiting change, growth and progress. In this mindset, we saw the environment as a limiting factor of wealth, and felt that there was a trade-off we had to come to terms with, sooner or later: since our planet's resources are finite, protecting environmental stability may well be a necessary burden in the end, but it can only come at the expenses of development. The 2030 Agenda, instead, implies that balance not only is compatible with progress and change, but also that there must be a dynamic balance between mankind and nature that acts as a propelling factor of expansion and quality of life: a synergy instead of a trade-off.

The interactions harnessed within such planetary balance can be described, at various levels of complexity, in the terms of a matrix, portraying how the whole situation evolves as a result of the variation of its elements. The last development Agendas hint in this direction: the images chosen to communicate both the Millennium Goals and the 2030 Agenda do look like a matrix, with the two similar graphics ascribing each goal to a box. In both tables, the difference between taking them as a matrix, instead of a mere list of goals, consists in identifying functions connecting all the different boxes, that we are only starting to explore in quantitative terms. It is not unrelated to this logic the fact that each goal of the 2030 Agenda will be monitored through quantitative indicators, just one step away from taking the path of monitoring their interactions and grouped evolution.

If we look at the Agendas in this perspective, we recognize functions that connect, for instance, "life on land" with "quality education" that, in turn, reflect on "no poverty" which, again, is a factor in "peace, justice, and strong institutions", the end result of which could, again in turn, reshape "life on land" and "quality education". In other terms, we are coping with trans-sector local, regional, or even global feedback loops. Underlying the 2030 Agenda, a more organic

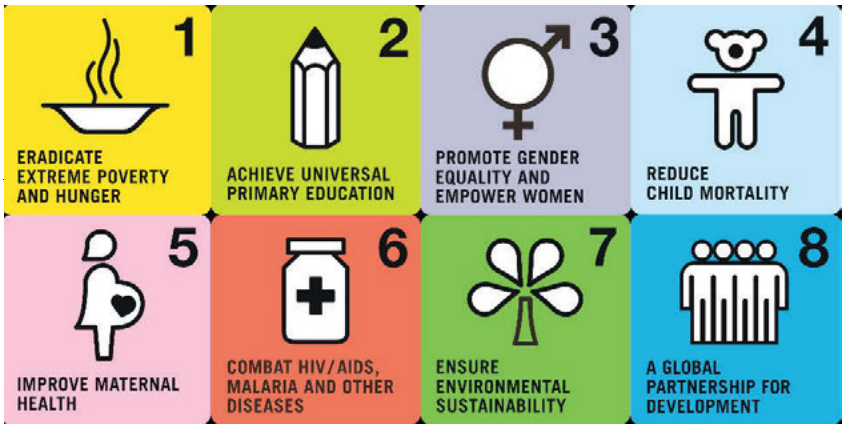

Fig. 1 Millennium Development Goals - 2000 to 2015

table can describe global balance - from an anthropic point of view – as a dynamic relationship among the environment, development, human rights, and peace.

A feedback loop seems at work among the four dimensions: if a land is contaminated, it will no longer sustain its owner, who can become vulnerable to abuses, prone to migrate or an easier pray to fanaticism. Or, conversely, if the peasant is granted a sounder education, ha can manage better his farm, defend it from contamination, count on a more dignified livelihood, and therefore resist temptations to engage in conflicts, etc. No matter which term of the matrix is subjected to an initial stress or improvement factor, its consequences can cyclically reverberate on the three related dimensions and grow in scope and impact. Feedback loops allow us to better understand and counter local dynamics of coupled societal-environmental disruption. They display an explanatory and predictive power in local crises in which underdevelopment, compression of rights, violence, and environmental decay, seem trapped in an inextricable cycle where every stress factor appears both a cause and an effect.

Yet, at this point in time, these dynamics look more than local and confined. We face "runaway climate change", the "great acceleration in species extinction", "ocean acidification", among various scenarios of environmental collapse, which are themselves the product of feed-back loops mankind is triggering within the natural world. Even if these ecosystem-wide threats proved overestimated each taken on its own, global environmental unbalance is also a function of growing local and sectorial perturbations: more than the result of their sum, it mimics the product of their multiplication, because local or sectorial unbalances tend to fuse and start more unbalances. These trends would be problematic even if they only developed within the natural world, but the perspective is worse as they resonate, cross, and overlap with human instability cycles. From the link between years of unprecedented drought and the Syrian crisis, to the role played by the agony of Lake Chad in fostering Boko Haram, all the way to the tensions around the shrinking Sea of Aral, disruptive human-environment loops are multiplying and converging.

Environmental degradation is often projected in future scenarios maintaining humanity as a rational or a non-reactive spectator. But the greatest unknown variable for the future refers to human behavior in the context of a growingly dysfunctional ecosystem, not to the ecosystem itself. If the impairment of ecosystem services becomes severe, it triggers societal and institutional fragility, instability, and conflict which, in turn, will paralyze society's aptitude to manage rationally the ecosystem

Fig. 2 Sustainable Development Goals – 2016 to 2030

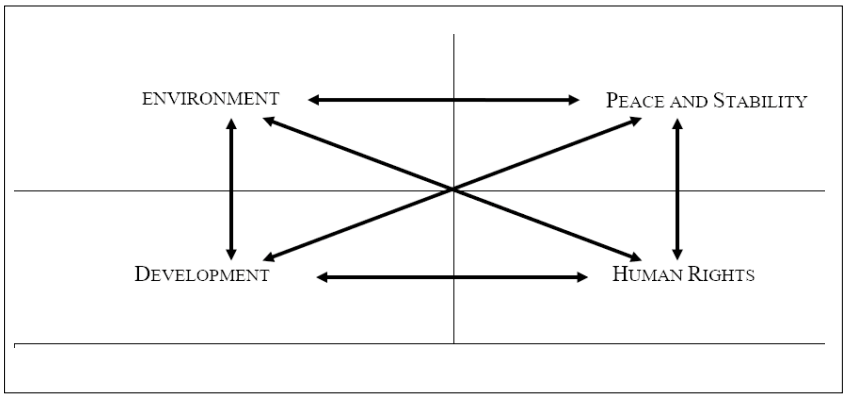

Fig. 3 An Underlying Balance Matrix

itself: predation of nature is a short-term way out in impoverished contexts. This, in turn, could worsen environmental degradation creating even greater instability and conflict in a dangerous self-feeding cycle.

Environmental degradation tends to display the same chain of societal consequences in every ecosystem, but these vary in magnitude. And magnitude does not only depend on the bio-physical features of a given territory; it is rather a direct function of local fragility in the human context. All forms of environmental degradation, indeed, act according to a definition that the U.S. Department of Defense and NATO have focused referring to climate change: "crisis and conflict accelerators" or "threats multipliers". The idea that environmental stress will prove first an "accelerator" rather than a stand-alone cause of conflicts, instability, and migrations as an end result, reflects the notion that ecosystem services depletion can be absorbed and countered in richer societies, especially if they provide emergency safety nets or social and productive assistance to concerned families, and if they have means to access the global market to compensate local depletion. On the contrary, stress on ecosystem services overburdens the cohesion and security structure of socially fragile or poorer communities; there it initiates or amplifies latent tensions and conflicts, that have nonetheless the potential to spread globally, so that it is clearly a common interest of mankind to give priority to the protection of poorer and fragile communities and of their ecosystems viability: both to keep them on board in the global challenge of mitigation and to prevent them from engaging in destabilizing dynamics likely to spill over beyond their regions.

In this scenario, no nation can consider itself safe and isolated, even if it is solid enough to face environment degradation on its own territory, or if it is temporarily benefitting from environmental modifications: the bad fate of the poorer will end up affecting the whole system. Development aid, in this perspective, acquires a new status: far beyond an overdue instrument to bridge a gap in justice and opportunities, it stands out as the first action needed to defuse a planet wide loop of disruption, provided it is environmentally compliant, integrated, and mainstreamed.

Feedback loops in action within the interconnectedness of the global system are a threatening and disturbing perspective, foretelling higher than foreseen disruption and introducing a scaring degree of complexity in the equation. On the other hand, they help us better focus the goal: our task is not to solve a collection of isolated problems but to halt and reverse interlinked loops. It requires an analysis of complex interactions but - once sensitive connection knots are identified – this will provide us with a very powerful tool to bring balance back in track: we can leverage the interconnectedness of the system in the opposite direction, towards re-balancing the system, with a few well targeted initiatives.

Indeed, an unbalance in one sector tends to propagate to others and start cumulative cycles, but also the opposite seems true: rebalancing certain crucial regions, sectors or dynamics could start a cascade and cycle of wider rebalancing. This notion is also surfacing at the operational level as we start to identify more and more societal co-benefits of environmental actions: these, in turn, consolidate communities and put them in better conditions to start caring about their future and therefore to manage sustainably their environment, reverting the most dangerous loop of all. In a system that hosts cycles, both directions can be taken: it is increasingly clear that social protection initiatives have environmental co-benefits and that protecting the environment can put in motion a cycle of socio-economic progress. The myth of the trade-off between nature and progress is dead.

At this stage, co-benefits pose a problem in international negotiations about development finance, especially with respect to climate finance. Developing countries have claimed that the climate co-benefits

of socially oriented aid – for instance – should not serve as an excuse to establish a double accounting through which one same initiative would appear twice: in the book of social aid and in the book of climate finance. Yet, this tension itself shows that approaching development aid in terms of trans-sector feedback loops is simplifying the problem, not complicating it: in the end, it means that we simply have to increase the volume of aid, and that protection brought on the human side of the equation helps solve the nature term, provided it is at least environmentally compliant. Beyond the accounting methods disputes, this reality is imposing itself, as the most recent OECD indications about climate finance accounting allow to ascribe a climate/environmental marker to development initiatives focused on sectors so disparate as governance or gender equality[1].

Co-benefits, in both directions, are just the first symptom of feedback loops; of a coherent global balance that can host both disruptive and constructive trans-sector cycles. The one feature that makes this balance coherent is that "mixed" loops – with both beneficial and destructive cascade consequences, among which a trade-off could be considered – seem to be foreign and incompatible with the system: in the end, all dynamics seem to resolve either in a comprehensively constructive cycle or in its opposite, while mixed balances mostly characterize transition phases or, more often, are considered "progress" by a group of temporary "winners" to the detriment of "losers"; but the total sum remains negative for the system.

If this is true, it has deep implications ranging from philosophy to economy, and especially in forging development aid. It means that what is really good for mankind tends to be protective of nature and, vice versa, that a healthy nature improves quality of life and sustains that better development we engaged in with the 2030 Agenda: no trade-offs. It also puts a big question mark on the whole development path chosen by mankind so far.

Our economies have been built on trade-offs: war and colonization, environmental degradation, unfair distribution, child labor, even slavery, have been justified in the name of industry and expansion. But doubtless, industrial economy distributed benefits. This seems contradictory with the notion of a coherent balance, but only apparently: those benefits were not for all, and it looks like the sum of the prices of all these trade-offs is what is bringing global balance off track in this phase. What went wrong with economic expansion and our chosen path of progress? A lot of bad planning and lack of vision, but the fundamental glitch has been that both public and private action has singled out only a few among the various multifaceted human needs and elected them as "progress", pricing them in the market: in other words, once technology allowed freedom from need, we decided to keep on concentrating all our efforts on the competitive accumulation of certain goods and services provided by the market, neglecting a wider spectrum of human needs. Yet, the equation "what's good for men is good for nature" does not work if "what's good for men" is represented by a partial segment of a more comprehensive set of conditions that define human well-being. It works, instead, if we look at the integral complexity of human condition and it injects the best balance in the satisfaction of our multiple needs for both mankind and nature.

These implications are not abstract. They are motivating a very concrete exercise, launched by the United Nations, parallel to and interwoven with the 2030 Agenda, called "Data Revolution": the search for statistical indicators of collective performance

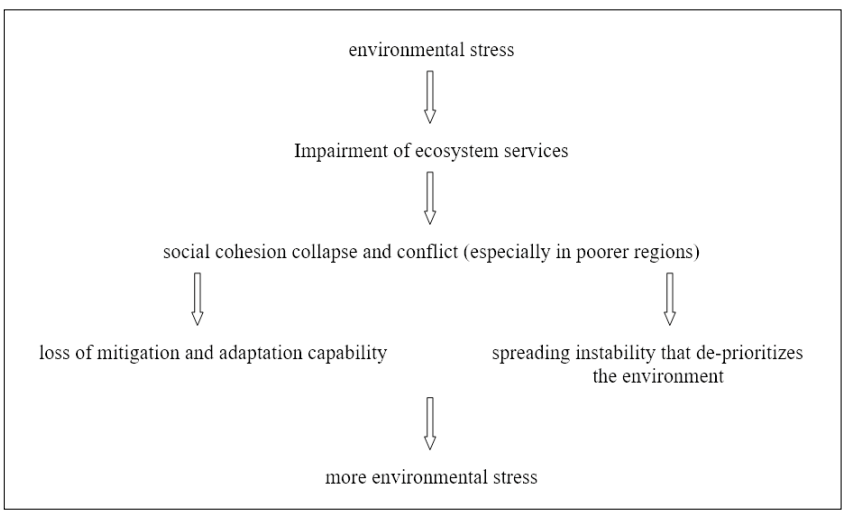

Fig. 4 The environmental degradation creates a dangerous self-feeding cycle

1 OCDE, DCD/DAC(2016)3/ADD2/FINAL

that take into account dimensions well beyond those considered in traditional GDPs, necessary to make sense of the 2030 Agenda matrix. A measurement of performance that takes into account - not against, but beyond market values – also health, peace, security, justice, human rights, provides a portrait of "progress" which is protective towards the environment, and in which the environment is a goal, not a limit. A solely market focused index of performance, instead, tends to be maximized often to the detriment of other values and "within the limits" of Earth's productivity.

Cyclical interlinkages come together with equivalences: fighting poverty adds up to protecting the environment; involving excluded women in building green belts adds up to security and economy; what we do in a region of the world will reflect on other portions of the planet. Possible combinations are endless. This does not mean we can avoid selecting priorities: anything goes, anyway it is either beneficial or detrimental to the system as a whole. It is the law of marginal utility that tells us we should intervene first where the problem is more severe: poorer communities, more fragile ecosystems that – it is not a coincidence – tend to be overlapping on the map.

A matrix is a mathematical instrument. It would not be surprising to discover that its ultimate solution lies in a simple and elegant equation, like the one fundamental physics is struggling to find in a theory of all. An equation for an Earth's theory of all is emerging: environment = justice. Something deep is at work.

For further information
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