Flourishing Lives on a Flourishing Planet

A North Star for Society in the Post-SDG Era

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Executive Summary

As the global community approaches 2030, it enters a decisive transition point. Over the past decades, the Millennium Development Goals, the Sustainable Development Goals, global climate targets, and biodiversity frameworks have provided focus, legitimacy, and measurable progress across many critical domains affecting people and the planet. They have helped reduce extreme deprivation, improved access to health and education, clarified planetary limits, and mobilised action at an unprecedented scale.[1]

Yet these frameworks were largely designed for a world in which the central challenge was to limit damage, reduce deficits, and slow unsustainable trajectories of an agenda focused on maximising Gross Domestic Product (SDG) and profit. They emerged in a context of widespread scarcity, where the assumption was that "more" was a reasonable approximation for "better". In a world where most people lacked food, shelter, safety, and basic services, and where sustainability was primarily understood as continuing growth while minimising harm to humans and ecosystems that made sense.

During this time the growth agenda centred on GDP and profit (more of everything), and the sustainability agenda centred on harm reduction (less bad). One seeks to get "more" without clear direction; the other seeks to make existing systems "less bad". While this logic was seen as necessary in earlier phases of global development, it now provides limited guidance for steering a world characterised by rapid technological change, geopolitical fragmentation, demographic shifts, widening inequality, mental health challenges, and accelerating ecological pressures.

A new North Star
Flourishing Lives for All on a Flourishing Planet does not replace existing goals. It builds on them, expands their scope, and gives them a shared direction. A healthy economy, harm reduction, climate mitigation, biodiversity protection, profit, innovation and economic productivity remain essential, but they are no longer sufficient as the primary organising principles for strategies, innovations, and investments.

The coming decades will be defined by a different challenge: how to intentionally shape societies capable of delivering flourishing lives for everyone, on a flourishing planet, in a context of rapid technological development, demographic change, mental pollution, geopolitical uncertainty, and ecological limits. This requires moving beyond a narrow focus on outputs (GDP, profits, emissions avoided) toward the ultimate outcome; The lived quality, meaning, and sustainability of human lives over time.

The history
At COP21[2] in Paris, Mission Innovation[3] was launched to accelerate clean energy innovation, including the development of methodologies to support a new generation of solution providers. A framework for assessing avoided emissions from new innovations compatible with a 1.5 °C pathways became a key priority. This initiative marked an important shift: from incremental improvements within existing systems toward innovations capable of transforming them. [4]

During the development of the avoided-emissions frameworks, a critical insight emerged among key stakeholders across the innovation ecosystem, companies, cities, investors, and incubators. Avoided emissions alone were not enough to guide decision-making. There was a growing need to also identify and assess positive contributions to human needs and wellbeing, in order to identify solutions that are not only

environmentally sustainable, but also socially meaningful, scalable, durable, and compatible with all relevant sustainability goals.

This insight initiated the development of a broader framework to assess globally sustainable solutions capable of delivering flourishing life-years for all on a flourishing planet. Rather than ignoring, or treating wellbeing as a secondary or indirect outcome, the framework places it at the centre of evaluation, alongside social- and ecological constraints.

Harm reduction remains essential, but it is no longer sufficient as the primary organising principle for innovation, policy, and investment. Profit and GDP can be valuable, but they are only tools, and these tools are only relevant if they make lives better for all in ways that are globally sustainable.

With a global population of more than 8 billion today and projected to reach 10–12 billion within this century, the question is no longer whether humanity can grow, but whether it can enable flourishing lives for all within planetary limits.[5]

Why a flourishing-focused post-SDG agenda
A focus on flourishing lives provides a number of distinct advantages:

1. *A positive vision beyond GDP and profit*
   While GDP and profit can be relevant tools, flourishing provides guidance on how societies can evolve post a growth paradigm and what kind of goals that are worth pursuing. Instead of a discussion about the pros and cons of GDP and profit the discussion can focus on the actual impacts in relation to human needs and global sustainability.

2. *A shared North Star across sectors*
   Flourishing lives offer a unifying objective that can align policy, business, finance, innovation, and civil society beyond siloed targets. Society can gather around a positive vision and young people in particular can be part of a new movement for a better tomorrow.

3. *Stronger engagement and legitimacy*
   A positive, human-centred vision resonates more strongly with citizens, cities, and institutions than both risk reduction alone, and a blind pursue of growth and profit.

4. *Inspiration for entrepreneurs and intrapreneurs*
   The framework motivates a new generation of innovators who want to leave a legacy by building solutions that improve lives, not only optimising existing systems that often are part of the problem, and/or generating extreme wealth for a few already wealthy.

5. *Better guidance under rapid change*
   In an era of fast technological and social transformation, a clear North Star provides orientation for new clusters that can deliver innovations beyond incremental optimisation towards human needs.

6. *Aligning human and planetary flourishing*
   The agenda explicitly links human wellbeing to all living beings and ecosystems, ecological limits, ensuring that flourishing lives are provided in ways that support a flourishing planet for all living beings.

7. *Mainstreaming a global perspective*
   Flourishing lives *for all* reframe sustainability as a universal priority, rather than a collection of optimisations of globally unsustainable systems. The focus on extreme resource efficiency and cost efficiency ensures a focus on those in most need.

8. *From reactive sustainability to intentional design*

A focus on flourishing shifts the focus from avoiding collapse to actively designing societies that enable health, meaning, participation, and resilience.

Five trends make a North Star both urgent and possible:

1. *Rapid technological development*
   Advances in digitalisation, artificial intelligence, biotechnology, and clean technologies are transforming how societies function at unprecedented speed.

2. *Geopolitical shifts*
   The global order is becoming more fragmented, multipolar, and volatile. Trust in international institutions is under strain, and cooperation on shared challenges such as climate change, biodiversity loss, and health risks is increasingly difficult. A North Star that delivers for all even if not everyone participate is more important than ever.

3. *Demographic changes*
   Populations are aging in many regions while growing rapidly in others, with profound implications for labour markets, care systems, cities, and social cohesion. Youth and aging populations need to be at the heart of a new generation of innovation that deliver flourishing lives.

4. *Two-lane economy*
   The global economy is increasingly characterised by a "two-lane" structure: one lane of high productivity, capital-intensive activities generating wealth for a minority, and another lane where large parts of the population face precarious work, limited access, and declining wellbeing.

5. *Mental/Brain health*
   Mental/Brain health challenges are rising across regions and age groups, driven by stress, insecurity, information overload, social isolation, and misaligned incentives in digital and economic systems.

The framework for "Flourishing Lives on a Flourishing Planet" and its corresponding measure "Flourishing Life-Years (FLYs)" have evolved fast and was first proposed as a new North Star for the post-SDG era at COP28.[6]

The focus on flourishing lives expands the policy, business, investment, and innovation ecosystem focus beyond a narrow economic output or problem reduction, toward the lived quality, meaning, and sustainability of human lives over time.

The methodology to assess contributions to flourishing lives integrate insights from wellbeing science, public health, philosophy, economics, and sustainability research into a single unit that can guide innovation, policy, and investment.

Flourishing lives include fulfilment of both basic human needs and higher-order capacities and potentials.

1. *Basic human needs*
   Basic human needs constitute the essential foundation for any flourishing life. These needs include physical and mental health, adequate nutrition, safe and supportive living environments, access to clean water and sanitation, personal security, mobility, education, and the material conditions required for dignity and participation in society. Without reliable access to these fundamentals, individuals and communities are constrained to short-term survival strategies, limiting their capacity to plan, learn, contribute, or adapt to change.

   Ensuring universal access to basic human needs remains a core priority of the post-SDG agenda. However, within a flourishing-focused framework, the emphasis extends beyond minimum thresholds to the quality, reliability, and

sustainability of how these needs are met. Solutions that deliver basic needs in ways that undermine health, social cohesion, or ecological stability cannot support long-term flourishing. A flourishing lens therefore evaluates not only whether basic needs are met, but whether they are met in ways that are resilient, equitable, and compatible with a flourishing planet.

2. *Higher-order capacities and potentials*
Higher-order capacities and human potentials enable individuals and societies to move beyond survival toward lives characterised by meaning, agency, creativity, and contribution. These capacities include cognitive and emotional development, learning and curiosity, critical thinking, ethical judgement, social connection, cultural expression, physical activity, and the ability to participate meaningfully in civic, economic, and cultural life.

Within a flourishing-focused framework, the development of higher-order capacities is not ignored or seen as a luxury reserved for affluent societies, but a central component of any flourishing society with focus on all citizens. These capacities promote mental wellbeing as well as enhance resilience, support social trust, enable innovation, and strengthen collective problem-solving in the face of rapid change. Importantly, they also shape values, behaviours, and aspirations, influencing how societies choose to meet human needs and manage shared resources over time.

By explicitly recognising higher-order capacities and potentials, the framework ensures that progress is assessed not only by what people have, but by what they are able to be and do. This shifts attention toward long-term human development, intergenerational wellbeing, and the creation of social and institutional conditions that allow individuals and communities to flourish on a flourishing planet.

The framework also includes categories that covers how human needs are met and expanded human needs that include nature and addressing existential risks.

Flourishing lives provide a bridge between the science of wellbeing/flourishing and strategic decision-making and innovation ecosystems. It translates human flourishing into terms legible to existing policy and economic frameworks without reducing human needs to a market value.

Establishing flourishing lives on a flourishing planet as a North Star in society support a new generation of solution clusters through a coherent, positive future-oriented, agenda for the next generation of innovation.

1. Flourishing Lives for All and the Post-SDG Agenda

As the world approaches 2030, it enters a decisive transition point. For the first time, leaders in the global community have the opportunity to establish a framework that not only focus on how to reduce harm, but how to actively shape societies capable of delivering flourishing lives for all on a flourishing planet.

This shift marks a qualitative expansion in how progress is defined, governed, and pursued. It is also an opportunity to establish a framework that can be used by a network of leaders from different parts of society, cities, companies, NGOs, academics, etc., rather than a negotiated framework that only include nation-states and try to include all nation, including those who do not support a better future for all on a flourishing planet.

Historic global frameworks among countries under the UN have played a vital role. The Millennium Development Goals focused attention on extreme deprivation and succeeded in mobilising unprecedented resources to reduce poverty, improve health, and expand access to education. The Sustainable Development Goals broadened this agenda, integrating social development with environmental protection, climate action, and biodiversity concerns, while providing a shared global language for action across governments, businesses, and civil society.

Climate targets, biodiversity goals, and planetary boundaries have further clarified the biophysical limits within which human activity must operate. Together, these frameworks have helped societies understand what must be avoided: dangerous warming, ecosystem collapse, extreme poverty, and irreversible harm.

However, these agendas are largely reactive by design. They are framed around reducing the bad, limiting damage, and slowing unsustainable trajectories. This logic was historically necessary, but it provides limited guidance for steering a world characterised by rapid technological change, geopolitical fragmentation, demographic shifts, and deep transformations in how people live, work, and relate to one another.

A post-SDG agenda therefore requires a new North Star. Flourishing Lives for All on a Flourishing Planet does not replace existing goals. It builds on them, expands their scope, and gives them a shared direction. Harm reduction remains essential, but it is no longer sufficient as the primary organising principle for innovation, policy, and investment.

A flourishing-focused agenda introduces a positive, generative vision of progress. It asks not only what societies should avoid, but what they should actively enable: healthy, meaningful, socially connected lives that can be sustained on a flourishing planet. By focusing on lived human outcomes rather than sector-specific problems, it provides a unifying frame that links climate, biodiversity, health, education, innovation, and wellbeing into a coherent whole.

This shift also changes who can engage and how. A flourishing agenda opens space for new stakeholders, including cities, cultural institutions, health providers, educators, entrepreneurs, and intrapreneurs who are motivated not only by compliance or incremental efficiency, but by the desire to leave a positive legacy. A focus on flourishing lives for all speaks to a generation that is less inspired by optimisation of fundamentally unsustainable systems, and more motivated by building futures that are fair, meaningful, and worth inheriting.

Crucially, a focus on flourishing lives for all makes a global perspective mainstream. Instead of treating sustainability as a set of local optimisations or isolated sectoral fixes, it foregrounds the question of whether systems can deliver good lives for everyone, everywhere, without relying on extraction, exclusion, or ecological overshoot. This reframing helps move debates beyond narrow

efficiency gains and toward systemic redesign aligned with universal human needs and planetary stability.

In this sense, Flourishing Lives for All on a Flourishing Planet could function as an integrating North Star for the post-SDG era. It aligns existing climate, biodiversity, and development goals, add existential risks and combine this with the traditional social goals. Then it brings them all together with a shared purpose and compelling vision that can guide innovation, governance, and investment in a world of rapid change.

1.1 Key arguments for a flourishing-focused post-SDG agenda

1. A positive vision beyond GDP and profit

While GDP and profit can remain important tools for tracking economic activity and organisational performance in some cases, they provide limited insight into whether societies and companies are actually improving people's lives in sustainable ways. A flourishing-focused agenda shifts attention from economic output alone to the quality, meaning, and durability of human lives, recognizing that growth without direction can coexist with declining wellbeing, inequality, and ecological degradation. By focusing on flourishing, societies gain guidance not only on *how much* they grow, but *why* they grow and *what kinds of outcomes* that growth should deliver. This enables policy, business, and investment decisions to be evaluated against their contribution to lived human wellbeing rather than abstract aggregates.[7] In a few years we might see leading economic news outlets start to track how companies are contributing to flourishing lives, rather than obsessing over stock market changes. This also reflect comments like those from UN secretary general António Guterres: "Global economy must move past GDP to avoid planetary disaster".[8]

2. A shared North Star across sectors

One of the central challenges of current sustainability and development agendas is fragmentation. Climate policy, health policy, innovation policy, and economic policy often operate in parallel, guided by different metrics and incentives. A flourishing-focused North Star provides a unifying objective that can align action across sectors by anchoring them in shared human outcomes. Rather than coordinating through compliance, actors can coordinate through purpose: improving people's ability to live healthy, meaningful, and socially connected lives on a flourishing planet.[9]

3. Stronger engagement and legitimacy

Risk-based targets and long-term environmental thresholds, while scientifically essential, often struggle to mobilise broad public engagement. A flourishing-focused agenda grounds global challenges in everyday human experience, making them more tangible and legitimate for citizens, cities, and institutions. By linking goals for a flourishing planet to outcomes most people care about in their everyday lives, health, safety, belonging, opportunity, and meaning, it strengthens democratic legitimacy and social support for system transformation. A flourishing-focused agenda reframes equality for all not as redistribution alone, but as universal access to the conditions required for good lives[10]

4. Inspiration for entrepreneurs and intrapreneurs

Many entrepreneurs and intrapreneurs are motivated not only by financial returns, but by the desire to contribute to solutions that matter. A flourishing-focused agenda provides a clear sense of purpose and legacy, helping innovators identify opportunities where business success aligns with improved human outcomes. This expands innovation beyond efficiency gains

and product substitution toward new systems, services, and business models that deliver lasting social value.[11]

5. Better guidance under rapid change

Rapid technological development and social transformation create uncertainty that incremental optimisation cannot adequately address. A flourishing-focused North Star offers direction under uncertainty, helping decision-makers evaluate emerging technologies and systemic innovations based on their contribution to human wellbeing and resilience, rather than narrow efficiency or short-term returns. This is particularly important when technologies scale faster than governance frameworks can adapt.[12]

6. Aligning human and planetary flourishing

A flourishing agenda explicitly integrates wellbeing with ecological limits, ensuring that improvements in human lives do not depend on environmental degradation or displacement of harm. By embedding Half-Earth and a flourishing planet within a human-centred framework, it supports development pathways that are both socially desirable and biophysically viable over the long term.[13]

7. Mainstreaming a global perspective

Flourishing lives for all reframe sustainability as a global systems challenge, rather than a series of local optimisations. It highlights the interconnectedness of consumption, production, wellbeing, and environmental impact across borders, helping avoid solutions that improve lives in one context while undermining them elsewhere.[14]

8. From reactive sustainability to intentional design

Finally, and one of the most important benefits with a flourishing-focused agenda, it marks a shift from reacting to crises by optimising existing products and systems toward intentionally developing and scaling a new generation of solutions that deliver on human needs in new ways. Instead of measuring success by how effectively harm is reduced, success can now be measured by how well new solutions support people living flourishing lives on a flourishing planet.[15]

1.2 Five trend supporting a shift
Five trends make the establishing flourishing lives for all on a flourishing planet a North Star urgent, possible and important.

First, **rapid technological development** has moved humanity into an era of abundance for the first time in human history, but it is an unfair and destructive abundance.[16] Advances in artificial intelligence (AI), robotics, virtual reality, neurotech, brain science, synthetic biology, nanotechnology, molecular machines, innovative materials, nature-based materials, and 3-D printing have dramatically increased productive capacity and technical possibility. In principle, these new technologies make it feasible to deliver health, knowledge, mobility, and material sufficiency at unprecedented scale and efficiency. In practice, however, they have largely been steered by profit maximisation and narrow productivity metrics rather than by systematic delivery on human needs within planetary limits.

As a result, technological abundance manifests in deeply perverse outcomes. Some populations face obesity, diet-related disease, and cognitive overload, while others still experience hunger, undernutrition, and exclusion from basic services. Some individuals are subjected to constant connectivity, surveillance, and work

intensification, while others are excluded from meaningful participation in the economy altogether. Material abundance itself has become a source of stress rather than wellbeing, exemplified by excessive consumption patterns, such as overflowing wardrobes or rapidly obsolete digital devices, that erode mental health while increasing ecological pressure.

Emerging technologies amplify these dynamics rather than correcting them when deployed without a flourishing-oriented framework. AI and robotics can automate work in ways that either liberate time for care, learning, and creativity, or concentrate power and deepen inequality. Neurotech and virtual reality can support rehabilitation, learning, and empathy, or intensify attention capture and behavioural manipulation. Synthetic biology, nanotechnology, molecular machines, and innovative materials can radically reduce resource intensity and pollution, or accelerate extractive throughput if aligned with unsustainable business models.

A post-SDG agenda must therefore move beyond celebrating technological innovation per se and instead govern how new technologies are embedded in systems of provision, labour, culture, and meaning. Innovation must be redirected toward delivering flourishing lives for all, meeting survival needs, supporting higher human needs, and respecting planetary boundaries, rather than maximising throughput, speed, or engagement. Flourishing lives for all must be treated as a universal design objective for technological development, not as a secondary benefit that may or may not emerge once economic growth has been secured.

Second, **geopolitical shifts** and fragmentation demand a framework that applies to everyone. It is no longer credible to define progress primarily as moving people out of extreme poverty while inequality within and between societies continues to grow. Societies require guidance that applies across income levels and contexts, from local communities and cities to nations, regions, and the global system. In this context, a positive, human-centred North Star can serve as a unifying reference point that transcends narrow national interests. By focusing on flourishing lives for all, the agenda reframes global cooperation around shared human outcomes rather than competition over resources, growth, or technological dominance.

Third, **demographic changes** introduces both urgency and opportunity. Aging populations, particularly in high-income and middle-income societies, are often framed as a burden. In an age of material abundance and technological capability, they can instead become the foundation for a wisdom-oriented society. Longer lives create the possibility to value experience, reflection, mentoring, and intergenerational learning in new ways. Realizing this opportunity requires new metrics and policy tools that go beyond labour productivity and economic dependency ratios.

Fourth, the **two-lane economy** where a small group of people are benefitting from the economic development while the vast majority are left out. The trend since the pan-pandemic in 2021 have been given many names, K-shaped, two-lane, or windchill economy. They all address the challenge that while economies are doing well according to traditional measures such as GDP, the benefits are not distributed equally. What measures that deliver flourishing lives for all is therefore increasingly important to understand.

Fifth, **mental health** must be placed at the core of the post-SDG agenda. Opportunities for creative, meaningful, and self-directed lives

have never been greater. At the same time, digital environments optimized for short-term engagement have produced widespread mental pollution in addition to already established business that exploit our reward systems such as fast food and fast fashion. The overstimulation of dopamine-driven reward systems, constant comparison, and attention extraction contribute to anxiety, depression, and reduced capacity for deep focus and reflection. These dynamics undermine individual wellbeing and collective decision-making. An agenda centred on Flourishing Life-Years must explicitly address the cognitive and emotional conditions required for healthy, resilient societies.

In this context, brain science has emerged as one of the most important foundations for a post-SDG framework. Advances in neuroscience, psychology, and cognitive science are transforming understanding of motivation, learning, wellbeing, stress,

addiction, and creativity. These insights make it possible to design technologies, institutions, cities, and economic systems that align with how human minds function, rather than exploiting their vulnerabilities. Brain science helps clarify what supports long-term flourishing and what erodes it, providing an essential evidence base for policy and innovation in the coming decades.

Together, these developments point toward the need for a shift from a problem-avoidance paradigm to a flourishing-oriented agenda. Flourishing Life-Years offer a way to integrate technological progress, social equity, mental health, and the goal of a Half-Earth[17] future into a single, forward-looking framework. In a world of rapid change, the question is no longer only how to sustain what we have, but how to intentionally shape systems that allow people and the planet to thrive together.

2. A New North Star

The transition to a post-SDG agenda does not only provide an opportunity to add new goals. It is an opportunity to change the underlying logic of how societies define progress and steer development. Much of the sustainability agenda of the late 20th century was built around harm reduction. The dominant aim was to slow down environmental degradation, reduce deprivation, and prevent irreversible damage. That mindset is clearly reflected in the Brundtland Commission's widely used definition of sustainable development as meeting present needs without compromising the ability of future generations to meet their own needs.[18]

That framing was historically necessary. However, it is increasingly insufficient for three reasons.

First, modern innovation is now fast, systemic, and general-purpose. Digital technologies, AI, synthetic biology, and advanced materials do not arrive as isolated products. They reshape institutions, labour markets, information environments, and power structures. Steering these developments with constraints alone is like trying to guide a high-speed train by shouting "not that way" from the platform.

Second, harm reduction approaches tend to optimize for compliance rather than contribution. They are effective at setting floors, but weak at creating ceilings of ambition. They can slow damage while leaving societies without a shared vision of what they are trying to build.

Third, the legitimacy conditions for global agendas are changing. Younger generations are being asked to accept constraints in the name of future safety while often lacking an inspiring, concrete picture of what a good future is. A post-SDG agenda needs a positive and operational definition of success that can guide decisions under uncertainty.

This is the core shift. The post-SDG agenda must evolve from harm reduction to intentional system design.

2.1 The limits of constraints-only governance

Constraints are necessary. Planetary limits and ecological thresholds are real. The planetary boundaries framework formalized the idea of a "safe operating space for humanity" and has become a central reference for understanding Earth system risks.[19] More recent work by the Earth Commission extends this into "safe and just" Earth system boundaries, explicitly linking biophysical stability to human harm and equity, which is directly relevant for a universal post-SDG agenda.[20]

However, constraints alone do not tell societies what to prioritize when multiple futures are feasible, nor how to evaluate trade-offs between competing pathways that are all technically compatible with emissions targets. A low-carbon future can still be unequal, psychologically corrosive, and politically unstable.[21] Flourishing pathways aligned with low-energy-demand futures have the potential to reduce pressure on ecosystems while improving wellbeing

This is the point where design thinking and systems thinking become essential. Systems research emphasizes that the highest leverage interventions are not small parameter tweaks but shifts in goals, rules, and underlying paradigms. Donella Meadows' classic work on leverage points highlights that changing a system's goal and its information flows can be far more powerful than adjusting numbers such as tax rates or efficiency standards.[22]

A post-SDG agenda therefore needs a goal that is both ethically legitimate and operationally usable. Flourishing Life-Years provide a candidate for that goal.

2.2 Flourishing Life-Years as a positive design criterion

The concept flouring lives and the associated measure "Flourishing Life-Years (FLYs")" is not proposed as a replacement for revenues, health, employment, or traditional sustainability goals. It is meant to provide a clear North Star for strategic work and guidance for impact driven organisations, as well as what traditional sustainability goals should result in. The core idea is that it provides a guidance for the direction we should strive towards in order to deliver a better future (not just a less bad one). Without business model innovation, many sustainability efforts remain confined to marginal efficiency gains rather than structural change.

In practice, FLYs function as a design test for technology, institutions, and infrastructures:

- Do they expand people's real opportunities to live healthy, meaningful, socially connected lives over time
- Do they reduce exposure to conditions that predictably erode wellbeing and agency
- Do they do so in ways compatible with planetary limits and with inclusion across populations

This matters because many of the most damaging dynamics of the early 21st century was not caused by a lack of constraints, but by the absence of a guiding positive goal. Societies got very good at optimizing for economic throughput and short-term convenience, while undervaluing mental health, meaning, social cohesion, and long-run resilience.

Even ambitious sustainability strategies struggle to remain viable when scaled to the needs and aspirations of 9–12 billion people, unless they are paired with systemic changes in how human needs are met.

FLYs shift the default question. Instead of asking only "is this less harmful," decision-makers can ask "is this actively generative of flourishing, and at what resource cost." That single shift changes innovation priorities.

Incubators play a critical role in translating emerging ideas into scalable solutions within innovation ecosystems by functioning as intermediary spaces between experimentation and deployment. They provide structured environments in which early-stage concepts can be tested, refined, and stress-tested against real-world constraints, including user needs, regulatory conditions, and economic viability. Beyond technical support, incubators shape how problems are framed and which success criteria are prioritised, influencing whether innovations evolve toward narrow product optimisation or broader system-level solutions.

When aligned with flourishing-oriented objectives, incubators can help integrate multidisciplinary knowledge, connect start-ups with public and private actors, and embed considerations of equity, long-term wellbeing, and resource efficiency early in the innovation process. In this way, incubators do not merely accelerate growth; they act as governance nodes that influence which types of solutions are selected, scaled, or abandoned, thereby shaping the direction and societal impact of innovation ecosystems over time.

2.3 Design frameworks already moving beyond GDP and harm reduction

The move toward design-oriented progress metrics is not happening in isolation. It is visible across several influential policy and research traditions.

One is the "beyond GDP" and wellbeing measurement agenda. The OECD has explicitly developed a multidimensional wellbeing framework to monitor progress beyond economic output and to support people-centred policy.[23] This provides a strong institutional foundation for a post-SDG agenda, but it does not, on its own, solve the steering problem. Measurement can tell us what is happening, but it does not

automatically generate a strategy for shaping innovation systems.

A second is the rise of mission-oriented innovation policy. Mariana Mazzucato's work argues that public policy should do more than fix market failures.[24] It should shape markets by setting directional missions that mobilize investment, capabilities, and institutions toward public purpose outcomes. This approach is highly compatible with FLYs because it emphasizes directionality and public value rather than treating innovation as inherently good.

A third is responsible innovation and responsible research and innovation. For example there are an increasing numbers of governance frameworks created for emerging technologies built around anticipation, responsiveness, reflexivity, and inclusion.[25] This is valuable because it provides procedural safeguards, but it still leaves open the question of what substantive goal innovation should serve.[26] Flourishing lives can fill that gap by providing a clear, positive orientation for what "responsible" stakeholders should be responsible for.

A fourth is the integration of social foundations with ecological ceilings in economic thinking. The "doughnut" framing has been influential in expressing development between a social foundation and an ecological ceiling.[27] Flourishing lives on a flourishing planet is compatible with this, but the concept of flourishing lives is designed to go further by not only clarifying what basic needs that should be met and what ecological limits that must not be crossed, but instead offering a positive vision for society.

Taken together, these bodies of work show convergence. The post-SDG agenda has the opportunity to be framed as visionary agenda with focus on inspiration and guidance, not only a compliance challenge. Flourishing Life-Years provide a shared orientation for innovation ecosystems, aligning portfolios of actors rather than isolated projects.

2.4 What strategy work and system design means in practice

Strategies and system design in the post-SDG context does not mean central planning of everything. It means building institutions and incentive systems that reliably steer innovation and investment toward outcomes that expand flourishing in ways that also support a flourishing planet.

Knowledge, climate stability, biodiversity, and mental health function as global public goods that no single market actor can safeguard alone.

In practical terms, it often involves five steps.

I. Make the goal explicit and measurable
Constraints remain necessary, but they must be paired with a positive goal that can be tracked. FLYs enable a clear statement of purpose: deliver flourishing in ways that support flourishing lives for all on a flourishing planet.

II. Treat innovation as portfolios with focus on human needs, not projects.
Late-stage innovation is uncertain and nonlinear. The right unit of governance is often the portfolio. Human need-oriented innovation policy emphasizes that shaping direction requires coordinating multiple actors and projects under shared purpose rather than relying on isolated pilots. FLYs provide a way to compare and rebalance portfolios based on flourishing impact, not only outputs or patents.

III. Design information flows that steer behaviour
Meadows' leverage points highlight the power of information flows in system behaviour.[28] FLYs can be embedded into dashboards, public procurement criteria, funding requirements, and impact reporting so that organizations receive continuous signals about whether they are contributing to flourishing.

IV. Align governance with both safe and just boundaries

The "safe and just" framing is critical because biophysical safety does not guarantee social legitimacy. The Earth Commission explicitly links Earth system boundaries to human harm and justice considerations.[29] With rapid technological development and increased tensions in society it is also an urgent need to address existential risks.[30] FLYs can operationalize the "just" and "safe" dimensions by making distributional flourishing visible, rather than relying on averages that can mask exclusion. In addition, it also allows for existential risks to be part of all assessments.

V. Build procedural responsibility into fast-moving innovation domains

Responsible innovation frameworks provide a practical structure for governance under uncertainty, emphasizing anticipation, reflexivity, inclusion, and responsiveness. FLYs complement this by defining what the system is aiming to be responsive to: sustained, inclusive flourishing within limits.

In this sense, flourishing lives on a flourishing planet echoes concepts such as ecological civilization:[31] A societal orientation in which human progress is inseparable from the integrity of living systems in support of global sustainability.

3. The Basis for the Flourishing Lives for All on a Flourishing Planet-framework

For innovation to be sustainable and genuinely beneficial, it must address human needs comprehensively and adaptably. Innovations that support well-being are more than isolated improvements; they are carefully aligned with a balanced framework of both basic and higher-level needs. This balanced approach allows us to evaluate how new innovations meet essential survival requirements, such as health, safety, and security, alongside aspirations for creativity, autonomy, and social connection. Such a framework is vital because it ensures that technology, policy development, new economic tools, and innovation initiatives contribute to actual improvements in people's lives.

The need for an integrated approach to human needs is underscored by research showing that when technologies fail to consider the full spectrum of human requirements, they can inadvertently create or exacerbate problems.[32] For example, certain digital platforms designed for social interaction may, over time, lead to mental health challenges, such as anxiety or loneliness, due to a lack of focus on meaningful connection and intrinsic well-being.[33] By using a human needs-based framework to assess innovations, we can evaluate not only their functionality but also their deeper impact on quality of life and global sustainability.

Human needs encompass more than just basic survival; they also include personal growth, social belonging, and the pursuit of purpose. Addressing these needs in innovation requires a structured framework that accounts for various dimensions of well-being. Several established models of human needs offer insights that are critical for constructing such a framework. For each the contribution to flourishing lives are assessed.

Three thing that the models and frameworks below all share is that they, in contrast to flourishing Lives for all on a flourishing planet framework do not explicitly address
A. Delivery: How to deliver on human needs via enabling solutions, system substitution, and how to avoid existential risks
B. Equity: How to ensure flourishing lives for everyone on the planet.
C. Other living beings/ecosystems: How to ensure global sustainability and a flourishing planet.

Figure 1: Categories for social development and personal growth

3.1 Maslow's Hierarchy of Needs (1943)[34]

Maslow's model is one of the most well-known frameworks for understanding human needs. It organizes needs hierarchically, from basic physiological requirements (such as food, water, and shelter) to psychological needs (such as belonging and esteem), culminating in self-actualization, which includes creativity and personal fulfilment. This model emphasizes that foundational needs must be met before individuals can pursue higher-level aspirations.

A. Contributes to the flourishing lives framework:
- Offers an intuitive ladder from survival to growth that mirrors the survival → flourishing arc.
- Helps flag prerequisites (e.g., safety needed to allow for self-actualization), useful when assessing solution clusters.

B. Differs from the flourishing lives framework:
- Linear; whereas the flourishing lives framework allows multiple needs to be pursued concurrently.

3.2 Alderfer's ERG Theory (1969)[35]

Expanding on Maslow's hierarchy, Clayton Alderfer proposed three core categories of needs: Existence, Relatedness, and Growth (ERG). This model condenses Maslow's five levels into these three broad categories, asserting that individuals can work on fulfilling multiple needs simultaneously. Alderfer's theory is more flexible than Maslow's, allowing for individual variation in need fulfilment without a strict progression.

A. Contributes to the flourishing lives framework:
- Explain how structure needs into existence, relatedness, and growth, aligning with survival, social, and personal growth categories.
- Allows simultaneous pursuit and frustration, regression dynamics, in ways that are closer to innovation pathways.

B. Differs from the flourishing lives framework:
- Only descriptive of what people need, not how to mobilize multi-actor solution clusters, enablers, and resource logic.

3.3 Doyal and Gough's Theory of Human Need (1984)[36]

This framework identifies physical health and autonomy as primary human needs and links these to intermediate needs like nutrition, housing, and healthcare. This simplicity provides a useful basis for prioritizing basic needs, making it practical for evaluating policies or innovations that aim to meet such human needs. While the framework effectively highlights basic priorities, it has been critiqued for overlooking social and cultural dimensions of well-being, which are crucial for addressing higher-level human needs.[37]

A. Contributes to the flourishing lives framework:
- Prioritizes physical health and autonomy with concrete intermediate needs (nutrition, housing, healthcare), strong fit to the survival pillars.
- Offers policy-friendly criteria for minimum thresholds.

B. Differs from the flourishing lives framework:
- Weak on higher-order flourishing (art/creation, wisdom/spirituality) and enabling solution ecosystems.

3.4 Self-Determination Theory, SDT (1985)[38]

Developed by Deci and Ryan in the 1980s, SDT focuses on autonomy, competence, and relatedness as core needs for psychological well-being. The model is particularly valuable for assessing innovations aimed at mental health, motivation, and personal growth. Unlike frameworks that focus primarily on physiological needs, SDT emphasizes the role of intrinsic motivation and social connection, suggesting that well-being is not only about survival but also about the pursuit of meaningful goals. However, SDT is limited in addressing basic needs such as safety and

sustenance, making it complementary rather than comprehensive.

A. Contributes to the flourishing lives framework:
- Includes autonomy, competence, relatedness, and enriching the "social development/ personal growth" dimensions.
- Useful for designing solutions that sustain intrinsic motivation and mental well-being.

B. Differs from the flourishing lives framework:
- Minimal treatment of foundational survival needs and enabling systems; needs integration with nutrition/health and spaces/protection pillars.

3.5 Max-Neef's Human Scale Development Framework (1986)[39]

This approach identifies nine universal needs: Subsistence, protection, affection, understanding, participation, leisure, creation, identity, and freedom, and asserting that needs are constant, but the "satisfiers" used to fulfil them vary by culture and context. By differentiating needs from satisfiers, this model is especially valuable for evaluating whether innovations truly address needs or simply provide temporary solutions. Max-Neef's framework also underscores that fulfilling higher-level needs (such as identity and creation) is crucial for achieving comprehensive well-being.

A. Contributes to the flourishing lives framework:
- Clear separation of needs vs satisfiers dovetails with flourishing lives framework for evaluating whether solutions truly meet human needs.
- The nine universal needs map well onto survival + flourishing + participation/ empowerment.

B. Differs from the flourishing lives framework:
- Provides no guidance on enabling infrastructures (mobility, energy, info) and large-scale delivery mechanisms.

3.6 The Human Development Index, HDI (1990) [40]

The HDI, developed by the United Nations Development Programme, is a composite measure assessing key aspects of well-being, including life expectancy, education, and income per capita. Although primarily used at the societal level, the HDI offers a useful benchmark for innovations that address basic developmental needs, particularly in areas such as healthcare, education, and economic security. This index highlights measurable indicators that reflect improvements in fundamental human needs.

A. Contributes to the flourishing lives framework:
- Offers tractable societal-level indicators (health, education, income) that align with survival and development baselines.
- Useful for benchmarking progress where data are scarce.

B. Differs from the flourishing lives framework:
- Narrow scope; misses many flourishing dimensions (art/creation, wisdom, exploration) and ignores enabling systems and resource use

3.7 Schwartz's Theory of Basic Human Values (1992)[41]

Shalom Schwartz identified ten universal values that drive human behaviour, including security, conformity, self-direction, and benevolence. These values, while distinct from needs, often overlap with fundamental aspirations and help to illuminate how cultural and individual differences influence perceptions of well-being. This framework provides a psychological perspective on human needs that is helpful for understanding motivations and aligning innovations with underlying human values.

A. Contributes to the flourishing lives framework:
- Explains motivational values (e.g., security, benevolence, self-direction) that shape acceptance and uptake of solutions.

- Helps align solution narratives with cultural value profiles.

B. Differs from the flourishing lives framework:
- Values ≠ needs; provides little structure for building, scaling, and governing delivery systems or measuring avoided harms.

3.8 Rowe and Kahn's Successful Aging framework (1997)[42]

John Rowe and Robert Kahn's Successful Aging framework highlights three key components: low probability of disease and disability, high cognitive and physical functioning, and active engagement with life. It shifts the focus from merely avoiding illness to maintaining vitality and meaningful participation in society. The model has been influential in reframing aging as a process of growth and opportunity rather than decline.

A. Contributes to the flourishing lives framework:
- Sharply relevant to Nutrition/Health and Social participation. Include needs for older adults (low disease risk, high function, active engagement).
- Encourages reframing aging around vitality and participation.

B. Differs from the flourishing lives framework:
- Age-specific and clinically oriented; does not generalize to whole-of-society enabling infrastructures or resource efficiency logics.

3.9 Sen and Nussbaum's Capability Approach (2000)[43]

Amartya Sen and Martha Nussbaum's model highlights essential capabilities needed for a dignified life, such as bodily health, affiliation, and control over one's environment. The capability approach emphasizes individual agency, personal dignity, and social justice, offering a broad understanding of needs that includes empowerment and autonomy. This model is particularly relevant for assessing innovations that aim to support marginalized communities or promote social equity. However, its qualitative focus can make it challenging to apply as a quantitative assessment tool. This approach strengthens the moral foundations of a just transition, ensuring poverty eradication is pursued alongside dignity, agency, and participation.

A. Contributes to the flourishing lives framework:
- Shows how to have capabilities/agency at the centre with an equity emphasis.
- Bridges survival and flourishing by asking what people can be and do, not only what they have.

B. Differs from the flourishing lives framework:
- Qualitative and high-level; needs operational layers (enablers, clusters, resources) to guide delivery, scaling, and metrics.

3.10 The OECD Well-being Framework (2011)[44]

The OECD Well-being (or "Better Life") Framework was launched in 2011 as part of the OECD's Better Life Initiative. Alongside it came the Better Life Index, an interactive online tool. The OECD Well-being Framework helps to monitor societal progress "beyond GDP". The Framework provides a compass to understand how human well-being is evolving in the context of the ecological and digital transitions, and what key actions are needed to support it.

A. Contributes to the flourishing lives framework:
- Broad beyond-GDP lens across many life domains and sustainability for future generations compatible with a flourishing ambition.
- Offers indicator scaffolding that can host enabling-solution metrics.

B. Differs from the flourishing lives framework:
- Primarily measurement-oriented; requires delivery logic (solution clusters, system substitution, resource efficiency) to move from monitoring to action.

3.11 The Harvard University Human Flourishing Program: "Flourish" (2017)[45]

The Harvard University Human Flourishing Program developed the "Flourish" measure as a concise, empirically grounded tool for assessing core dimensions of human well-being. It includes two questions each across five domains: happiness and life satisfaction, mental and physical health, meaning and purpose, character and virtue, and close social relationships, with responses scored on a 0–10 scale. The items are drawn from validated well-being research and are designed for use across cultures and contexts.

Unlike many broader social indicator systems, the Flourish measure operates at the individual lived-experience level, capturing how people experience their lives rather than only their material or institutional conditions. This makes it especially useful for linking policies, environments, and innovations to subjective and relational dimensions of well-being.

The Harvard Human Flourishing Program's work was particularly influential in shaping the flourishing lives framework, especially in clarifying that flourishing must include meaning, virtue, and relationships alongside health and happiness. It helped ensure the framework did not reduce well-being to economic productivity or basic survival, but instead reflected a whole-person, multidimensional understanding of a good life.

A. Contributes to the flourishing lives framework:
- Provides a clear, research-grounded multidimensional structure for understanding flourishing at the individual level.
- Elevates meaning, purpose, character, and relationships as central components of a good life, strengthening the higher-order dimensions of the framework.
- Offers a simple, scalable measurement approach that can complement system-level indicators by capturing lived experience.

- Played a formative role in shaping the conceptual foundations of the flourishing lives framework, particularly its emphasis on holistic well-being beyond material conditions.

B. Differs from the flourishing lives framework:
- Primarily a measurement tool, not a framework for designing or delivering enabling solutions, system substitution, or resource efficiency.
- Focuses on individual outcomes, with less emphasis on the infrastructures, institutions, and ecological systems that enable or constrain flourishing.

3.12 The Inner Development Goals (2020)

The Inner Development Goals (IDG) initiative complements the Sustainable Development Goals by focusing on the *inner capacities* required for individuals and organisations to contribute effectively to complex societal transformation. Rather than defining new targets that deliver change in society, IDG identifies five clusters of inner skills and qualities: Being, Thinking, Relating, Collaborating, and Acting. These are assumed to underpin leadership, learning, ethical judgement, and collective action in the face of uncertainty and systemic challenges.

The IDG framework draws on research from psychology, leadership studies, education, systems thinking, and contemplative traditions. It responds to the growing recognition that achieving large-scale societal goals, such as climate action, equity, and wellbeing, requires more than technical solutions or policy instruments. It requires inner capacities such as self-awareness, empathy, critical thinking, perspective-taking, and the ability to act with integrity over long time horizons.

A. Contributes to the flourishing lives framework:
- Explicitly strengthens the wisdom, virtue, emotional regulation, and perspective-taking dimensions of flourishing lives.
- Highlights the importance of inner capacities for navigating complexity,

uncertainty, and ethical trade-offs, reinforcing the framework's focus on long-term judgement and responsibility.
- Provides a useful lens for leadership development, organisational culture, and education, supporting delivery actors within flourishing-oriented ecosystems.

B. Differs from the flourishing lives framework:
- Focuses on individual and collective inner capacities, rather than mapping how material systems, infrastructures, and resource flows deliver on human needs.
- Does not provide guidance on system substitution, enabling solutions, or planetary boundaries, which are central to the framework's delivery and sustainability logic.
- Operates primarily as a capability and mindset framework, not as an integrated model for assessing population-level outcomes, equity, or ecological impact.

3.13 The Global Brain Economy Initiative (2026)[46]

The Global Brain Economy Initiative (GBEI) is an international, interdisciplinary initiative focused on positioning brain health, cognitive capital, and mental wellbeing as central economic, social, and policy priorities. The initiative brings together insights from neuroscience, psychology, economics, public health, education, and innovation studies to argue that societies' long-term prosperity increasingly depends on how well they protect, develop, and deploy human cognitive and emotional capacities.

GBEI advances the concept of the *brain economy*, emphasizing that cognitive performance, mental health, learning capacity, creativity, empathy, and decision-making quality are not peripheral outcomes, but foundational assets for economic resilience, innovation, democratic governance, and social cohesion. It highlights how stress, mental illness, cognitive overload, and adverse social environments erode brain

capital, with downstream impacts on productivity, health systems, inequality, and political stability.

By reframing mental health and brain development as upstream economic and societal concerns, GBEI broadens traditional wellbeing and human capital discussions. Its work is particularly relevant in the context of digitalisation, urbanisation, climate stressors, and rapid technological change, where cognitive load, attention fragmentation, and mental strain increasingly shape life outcomes across the population.

A. Contributes to the flourishing lives framework:
- Places brain health and cognitive capacity at the centre of societal performance, strongly reinforcing the framework's emphasis on mental flourishing, wisdom, learning, and long-term judgement.
- Provides a systems-level narrative linking individual mental wellbeing to innovation capacity, economic resilience, and institutional quality.
- Strengthens the scientific grounding for treating mental health, attention, and learning environments as core enabling conditions for flourishing lives.

B. Differs from the flourishing lives framework:
- Focuses primarily on the brain economy lens, rather than a comprehensive mapping of human needs across survival, social development, and extended ethical dimensions.
- Does not explicitly structure delivery pathways through solution clusters, system substitution, or resource efficiency.
- Limited treatment of ecological boundaries, biodiversity, and non-human flourishing, which are central to the "flourishing planet" dimension of the framework

4. A framework for delivery on flourishing lives on a flourishing planet

The framework for delivery on flourishing lives on a flourishing planet provides a structured foundation for assessing how societies, organisations, and innovation systems contribute to long-term human wellbeing within planetary limits. It also underpins the development of the measure Flourishing Life-Years (FLYs), which captures not only survival or harm reduction, but the quality of lived experience over time.

The framework is explicitly human-need–centred and focuses on how innovations, and clusters of solution providers, deliver on these needs in ways that either support or undermine flourishing lives. Incubators can be designed as delivery nodes for flourishing-oriented innovation, aligning mentorship, finance, and metrics.

The framework builds on established theories of human needs, wellbeing, and capabilities, while extending them to explicitly integrate ecological constraints and long-term system dynamics.[47]

4.1 Basic/physical survival needs

Two categories of basic/physical survival Two categories of basic physical survival needs form the foundation of the framework:

1. *Nutrition/health*
   This includes access to adequate and nutritious food, clean water, sanitation, preventive healthcare, physical activity, and medical services. These factors are well established as determinants of mortality, morbidity, and baseline functional capacity across the life course.[48]

2. *Spaces/Protection*
   This includes shelter, thermal comfort, clean air, adequate lighting, and protection from environmental hazards. Housing quality, indoor air pollution, noise, and thermal

stress have well-documented impacts on physical health, cognitive functioning, and mental wellbeing.[49]

These are well established physical human needs and part of most current framework that address human needs.

4.2 Social development/ personal growth

Beyond physical survival, the framework emphasises social development and personal growth as a core category of human need. A growing body of wellbeing science demonstrates that once basic survival thresholds are met, additional improvements in material conditions yield diminishing returns for wellbeing, while social, psychological, and existential factors become dominant determinants of life satisfaction and resilience.[50]

Importantly, a flourishing-oriented perspective also changes how survival needs themselves are delivered. For example, nutrition is not only about caloric intake but also about sensory pleasure, cultural meaning, social interaction, and identity. Similarly, spaces and protection can either support agency, inspiration, and belonging, or contribute to alienation and stress depending on design and governance.[51]

This category therefore expands the framework to include needs that support a flourishing life. The seven categories below build on the theories and frameworks presented in chapter 2, are interlinked, and often mutually supportive.[52]

1. *Truth/equity*
   The human need for truth is inseparable from the human drive to understand. Across cultures and historical periods, people have been drawn to questions that extend far beyond immediate survival or instrumental benefit: where humans come from, how the universe began,

what matter is made of, how life emerged, and how mind and consciousness arise. The pursuit of true knowledge has long been valued not only for its practical applications, but as a fundamental expression of human curiosity, meaning-making, and identity.[53] The scientific method has been one of human kinds greatest achievements.

Research in psychology and cognitive neuroscience shows that curiosity and epistemic exploration are intrinsically rewarding, activating neural systems associated with motivation, learning, and memory consolidation, even in the absence of direct material payoff. This intrinsic orientation toward understanding helps explain why science and scholarship persist even when immediate benefits are uncertain or absent.[54]

Many of the most transformative scientific discoveries, such as those concerning evolution, atomic structure, or the scale and origin of the universe, were not driven by utility, yet profoundly reshaped how humans understand themselves and their place in the world. Such knowledge contributes to cognitive and existential security: A sense that the world is intelligible, that claims can be evaluated using shared standards of evidence, and that understanding can deepen over time. Environments that support learning, epistemic trust, and intellectual autonomy are associated with higher psychological wellbeing, greater tolerance of uncertainty, and stronger long-term planning capacity.[55]

Access to reliable knowledge and truthful information is therefore important, not merely a tool for instrumental decision-making. Conversely, environments characterised by persistent misinformation, epistemic manipulation, or erosion of shared epistemic standards undermine cognitive security and increase chronic stress. Empirical research links exposure to misinformation and epistemic instability to anxiety, reduced trust, attentional fragmentation, and impaired collective sense-making.[56]

At the physiological level, such environments contribute to elevated allostatic load, as individuals are required to remain in a state of heightened vigilance without reliable cues for what to believe or whom to trust.[57]

The need for truth is also inseparable from the need for equity. When access to knowledge, education, and credible information is unequally distributed, or when social structures systematically marginalise certain voices and forms of knowledge, epistemic injustice arises.[58] Perceived injustice, discrimination, and lack of control over life circumstances are strongly associated with stress-related physiological dysregulation, including altered cortisol patterns, increased inflammation, and elevated risk of mental and physical illness.[59]

In contrast, equitable institutions that uphold fairness, transparency, and epistemic inclusion promote psychological safety, social trust, and the capacity for long-term thinking.[60] At both individual and societal levels, truth-seeking and equity reinforce one another: scientific integrity, open inquiry, and fair social conditions enable people not only to access accurate information, but to participate meaningfully in knowledge creation and collective problem-solving.

Within a flourishing lives framework, truth is therefore not reducible to factual correctness or utility alone. It is a foundational human need rooted in curiosity, dignity, fairness, and the shared pursuit of understanding, supporting wellbeing, social cohesion, and the capacity to navigate complexity over the long-term.

2. *Beauty/creativity*

The human need for beauty and creative expression is deeply rooted in cognition, emotion, and meaning-making. Across cultures and historical periods, humans have invested time and resources in art, music, architecture, storytelling, and ornamentation even in contexts of material scarcity. This persistence suggests that engagement with beauty is not a luxury add-on to human life, but a core psychological and cultural need tied to how humans perceive, understand, and value the world.[61]

Empirical research in psychology and neuroscience shows that engagement with beauty and creative activity is associated with improved psychological wellbeing, emotional regulation, and cognitive flexibility.[62] Creative processes activate distributed neural networks involved in reward processing, imagination, associative thinking, and meaning attribution, including dopaminergic pathways linked to intrinsic motivation.[63] These processes support adaptive learning, openness to experience, and the capacity to integrate complexity, capacities that are also central to truth-seeking and scientific inquiry.

Exposure to aesthetically rich environments further contributes to mental flourishing and cognitive functioning. Research in environmental psychology demonstrates that visually coherent, engaging, and natural environments reduce stress, restore directed attention, and improve mood and executive function.[64] These effects are partly mediated through attentional restoration and parasympathetic activation, allowing cognitive resources depleted by sustained effort, vigilance, or information overload to recover. Architecture, urban design, and landscape aesthetics therefore shape not only sensory experience but also long-term cognitive and emotional resilience).[65]

Creativity and beauty also play a critical role in identity formation and social connection. Participation in artistic and creative practices supports self-expression, narrative identity, and a sense of belonging, all of which are protective factors for mental health across the life course.[66] At the collective level, shared aesthetic experiences, such as music, visual art, rituals, and cultural symbols, contribute to social cohesion and shared meaning, enabling societies to reflect on values, futures, and moral commitments.

Importantly, beauty and truth are not independent domains; they exhibit deep and mutually reinforcing synergies. In science, mathematics, and philosophy, aesthetic criteria such as elegance, coherence, simplicity, and explanatory power have long guided theory choice and discovery.[67]

Many scientists report experiences of beauty and awe when uncovering deep regularities in nature, and such experiences can motivate sustained inquiry even in the absence of immediate application.[68] From this perspective, beauty functions as an epistemic signal: patterns perceived as beautiful are often those that compress complexity into intelligible form, supporting understanding and insight.

Conversely, environments that systematically degrade aesthetic quality, through visual clutter, noise, monotony, or purely instrumental design, can undermine both creativity and truth-seeking by increasing cognitive load, stress, and attentional fragmentation.[69] Just as epistemic environments polluted by misinformation erode cognitive security, aesthetic environments stripped of beauty and coherence erode the conditions that support curiosity, reflection, and creative thought.

Within a flourishing lives framework, beauty and creativity therefore function both as an intrinsic value and as enabling conditions for both wellbeing and knowledge. They support emotional regulation, cognitive exploration, social connection, and the motivation to seek truth over the long term. Recognising beauty as a core human need, rather than a discretionary cultural extra, aligns with a broader understanding of human flourishing in which truth, creativity, and meaning co-evolve, reinforcing both individual wellbeing and collective capacity to navigate complexity.

3. *Virtue/generosity*
Virtue and generosity reflect a fundamental human orientation toward cooperation, care, and concern for others. Across cultures and historical periods, moral traditions have emphasised virtues such as generosity, compassion, honesty, and reciprocity as central to a good life, not only for ethical reasons but because they sustain social bonds and collective survival. Contemporary research in psychology, neuroscience, and public health increasingly supports the view that prosocial behaviour is not merely socially desirable, but deeply linked to human wellbeing and biological regulation.[70]

At the individual level, prosocial behaviour, including generosity, cooperation, and altruism, is robustly associated with higher subjective wellbeing, lower perceived stress, and better physical health outcomes. Experimental and longitudinal studies show that engaging in acts of giving increases life satisfaction and positive affect, even when such acts involve personal cost. Neuroimaging research provides converging evidence that generosity activates neural reward and affiliation systems, including fronto-mesolimbic circuits associated with pleasure, motivation, and social

bonding.[71]

These findings challenge the assumption that wellbeing is maximised through self-interest alone, instead suggesting that caring for others is intrinsically rewarding and biologically reinforced.

Prosocial behaviour also plays an important role in stress regulation and emotional resilience. Cooperative and supportive social interactions buffer physiological stress responses, reducing cortisol reactivity and promoting parasympathetic activity.[72]

Over time, these effects contribute to lower allostatic load and reduced risk of stress-related illness. Virtue-oriented dispositions such as compassion, gratitude, and forgiveness are further associated with improved emotional regulation and lower incidence of depression and anxiety.[73] In this sense, generosity and virtue function as protective psychological resources across the life course.

Beyond individual effects, virtue and generosity operate as system-level properties of societies. Social norms of reciprocity, trust, and mutual aid are central components of what has been termed social capital, the networks, relationships, and shared expectations that enable coordination and collective action.

High levels of social capital are consistently associated with better population health, lower mortality, greater institutional trust, and increased resilience to social and environmental shocks.[74] These effects persist even when controlling for income and material resources, highlighting the independent contribution of social virtue to societal flourishing.

Importantly, virtue and generosity are not only personal traits but are shaped by institutional design and cultural

signals. Economic and organisational systems that reward narrow self-interest, competition without safeguards, or zero-sum status dynamics can erode trust and cooperative norms over time. Conversely, systems that recognise, enable, and normalise prosocial behaviour, through fair rules, inclusive governance, and visible role models, can strengthen virtuous cycles of cooperation and wellbeing.[75]

Within a flourishing lives framework, virtue and generosity therefore represent more than moral ideals. They are empirically grounded determinants of mental health, social cohesion, and adaptive capacity. By supporting prosocial motivation at both individual and collective levels, societies increase their ability to manage complexity, absorb shocks, and pursue long-term goals. In this way, virtue and generosity contribute directly to flourishing lives, while also reinforcing other core needs such as trust, justice, and shared meaning.

4. *Justice/fairness*
Justice and fairness constitute core human needs because they shape both subjective experience and objective life chances. Across societies, perceptions of fairness influence whether individuals feel secure, respected, and able to plan for the future. A large body of research in social epidemiology, psychology, and neuroscience demonstrates that perceived injustice is not merely a moral concern, but a powerful determinant of mental and physical wellbeing.[76]

At the individual level, experiences of unfair treatment, discrimination, or arbitrary decision-making are consistently associated with heightened psychological stress and negative health outcomes. Experimental and observational studies show that perceived injustice activates stress-

response systems, increasing cortisol release, sympathetic nervous system activity, and inflammatory markers.[77] Chronic exposure to such conditions contributes to elevated allostatic load, which in turn increases the risk of depression, anxiety disorders, cardiovascular disease, and impaired cognitive functioning.[78]

Importantly, it is not only material deprivation that drives these effects, but relative position and procedural fairness. Research on organisational and societal contexts shows that individuals exposed to unfair rules, opaque decision-making, or lack of voice experience worse health outcomes even when material resources are held constant.[79] This highlights that justice operates as a psychosocial determinant of health, mediated through perceived control, predictability, and dignity.

At the collective level, fair institutions play a central role in sustaining trust, cooperation, and social cohesion. Societies characterised by lower inequality and stronger perceptions of procedural justice tend to exhibit higher average wellbeing, better population health, and lower levels of violence and social fragmentation. Fair processes enhance institutional legitimacy, increasing voluntary compliance with rules and willingness to contribute to collective goods. This, in turn, reduces the need for coercive enforcement and lowers background stress across society.

Justice also supports long-term societal stability. When people perceive institutions as fair and responsive, they are more likely to engage in future-oriented behaviours such as education, investment, and civic participation.[80] Conversely, persistent injustice erodes trust, amplifies grievance, and increases vulnerability to polarisation and social unrest, undermining the collective capacity to manage complex challenges

such as climate change, public health crises, and technological transitions.

Within a flourishing lives framework, justice and fairness therefore function as system-level enablers of wellbeing. They shape the environments in which other human needs, such as truth, virtue, creativity, and social connection, can be reliably met. Fair institutions reduce chronic stress exposure, support psychological security, and enable societies to coordinate around shared goals over long time horizons. In this sense, justice is not only a moral ideal but a foundational condition for sustained human flourishing.

5. *Recreation/exploration*
Recreation and exploration address a fundamental human need for restoration, play, movement, and engagement with novelty. Across evolutionary history, humans developed in close interaction with natural environments, relying on movement, exploration, and sensory engagement with landscapes for survival, learning, and social bonding. Contemporary research confirms that recreational activity, particularly when it takes place outdoors and in contact with nature, is not discretionary, but central to psychological wellbeing, emotional regulation, and long-term cognitive functioning.[81]

Outdoor recreation plays a particularly important role in stress reduction and cognitive restoration. Exposure to natural environments has been shown to reduce physiological markers of stress, including heart rate, blood pressure, and cortisol levels, while improving mood and attentional capacity.[82] Compared to indoor or highly built environments, natural settings provide sensory patterns that are rich but not cognitively demanding, allowing depleted attentional systems to recover. This restorative effect supports executive function, self-regulation, and emotional balance,

capacities that are easily eroded in high-intensity, information-saturated contexts.

Physical activity conducted outdoors further amplifies these benefits. Walking, hiking, cycling, and other forms of outdoor movement combine the neurobiological effects of exercise with the restorative effects of nature exposure. Empirical studies indicate that "green exercise" is associated with greater improvements in mood, self-esteem, and stress reduction than comparable indoor activity.[83] Regular outdoor physical activity is also linked to reduced risk of depression and anxiety, improved sleep, and better cognitive performance across the life course.[84]

Connection to nature also supports psychological resilience and meaning-making. Longitudinal studies show that access to green and blue spaces is associated with better mental health outcomes, lower prevalence of mood disorders, and reduced health inequalities.[85] Beyond these health effects, experiences of awe, wonder, and fascination in natural environments contribute to a sense of perspective and humility, supporting emotional regulation and prosocial orientation.[86] In this way, nature-based recreation contributes not only to recovery, but to deeper forms of psychological flourishing.

Exploration extends beyond physical environments to include engagement with new cultures, ideas, and ways of life. Travel, intercultural exchange, and exposure to unfamiliar social contexts stimulate curiosity-driven learning and challenge habitual patterns of thought. Research in social and cultural psychology suggests that intercultural experiences increase cognitive flexibility, creativity, and tolerance for ambiguity, while reducing prejudice through sustained contact and perspective-taking.[87] Such experiences expand individuals' interpretive frameworks, supporting adaptability and reflective judgement in

complex social environments.

Cultural exploration also supports identity development and life satisfaction. Engaging with diverse cultural practices, through language, art, food, rituals, or shared activities, enables individuals to situate their own identities within a broader human context. This process has been linked to increased openness to experience, personal growth, and a stronger sense of meaning.[88] At the societal level, norms and infrastructures that enable cultural exchange and exploration contribute to social cohesion, mutual understanding, and resilience in pluralistic societies.

Within a flourishing lives framework, recreation and exploration therefore function as enabling conditions for sustained wellbeing and adaptive capacity. Outdoor activity and connection to nature restore depleted cognitive and emotional resources, while exploration of new environments and cultures strengthens learning, creativity, and social understanding. Treating recreation and exploration as essential human needs, rather than optional leisure, supports not only individual health, but the collective capacity to navigate change, diversity, and uncertainty over the long term.[89]

6. *Inspiring art*
Inspiring art addresses a fundamental human need for meaning, emotional expression, and shared understanding. Across cultures and historical periods, humans have created and engaged with art, music, visual arts, dance, literature, theatre, and ritual, not merely for entertainment, but as a way to process experience, communicate values, and make sense of the world. This universality suggests that artistic expression is not peripheral to human flourishing, but a core mode through which emotions, identities, and collective narratives are formed and transformed.[90]

Inspiring art

At the individual level, exposure to and participation in the arts is associated with improved emotional regulation, empathy, and psychological wellbeing. Experimental and observational studies show that artistic experiences engage neural systems involved in reward, affect regulation, meaning-making, and social cognition, including networks associated with emotion processing and theory of mind.[91] Through these mechanisms, art provides structured opportunities to explore complex emotions, tolerate ambiguity, and integrate conflicting perspectives, capacities that are central to mental health and adaptive functioning.

Participation in artistic activities also supports social connection and belonging. Group-based artistic practices, such as music ensembles, theatre, choirs, and community arts, foster synchrony, shared attention, and emotional alignment, which strengthen social bonds and trust.[92] These social effects are particularly important in contexts of loneliness, marginalisation, or social fragmentation, where art can function as a low-threshold pathway to inclusion and mutual recognition.

Population-level evidence further supports the role of arts engagement in long-term health outcomes. Longitudinal cohort studies indicate that cultural participation is associated with lower rates of depression, improved life satisfaction, and reduced mortality risk, even after controlling for socioeconomic status and baseline health.[93] These findings suggest that the benefits of art extend beyond short-term mood enhancement to cumulative effects on resilience and wellbeing across the life course.

Beyond individual and group effects, art plays a critical collective and societal role. Artistic works and cultural institutions contribute to the formation of shared

narratives through which societies interpret past experiences, articulate values, and imagine possible futures. Art enables symbolic exploration of moral dilemmas, social tensions, and existential questions in ways that are emotionally resonant and publicly accessible. In periods of rapid change or crisis, such narrative functions support collective sense-making, empathy across differences, and reflection on long-term directions.[94]

Within a flourishing lives framework, inspiring art therefore functions as both an individual-level and system-level enabler. It supports emotional regulation, empathy, and social connection at the personal scale, while simultaneously shaping collective meaning, cohesion, and future orientation at the societal scale. Recognising art as a core human need, rather than a discretionary cultural luxury, strengthens the conditions for psychological resilience, democratic dialogue, and shared capacity to navigate uncertainty and transformation.

7. *Wisdom*
Wisdom can be understood as a culminating human need that emerges from, and integrates, other higher human needs such as truth, beauty, justice, virtue, creativity, and meaningful social connection.

Wisdom

In psychological science, wisdom is commonly defined as the integration of knowledge, emotional regulation, perspective-taking, and prosocial orientation, applied in ways that balance self-interest, concern for others, and sensitivity to context.[95] Unlike narrow forms of intelligence or expertise, wisdom is not reducible to information accumulation or technical skill; it involves judgement about how and when to use knowledge in situations characterised by

uncertainty, value conflict, and long time horizons.

Across philosophical and religious traditions, wisdom occupies a central place as an orientation toward the good life and right action. From Aristotelian phronesis (practical wisdom), to Confucian notions of cultivated judgement and harmony, to Buddhist and Christian traditions emphasising compassion, humility, and discernment, wisdom is treated as a quality that integrates understanding, character, and ethical concern. These traditions converge on the idea that wisdom is not typically accessible under conditions of deprivation or chronic stress, but develops when more basic needs and stabilising higher needs, such as security, knowledge, fairness, and social belonging, are sufficiently met.

Contemporary psychology echoes this insight, showing that chronic stress and scarcity impair perspective-taking and long-term reasoning, while supportive conditions enable reflective judgement.[96]

At the individual level, higher levels of wisdom are associated with greater life satisfaction, emotional balance, resilience, and reduced loneliness.[97] Wisdom-related traits such as cognitive flexibility, tolerance of ambiguity, humility, and compassion support adaptive coping with adversity and protect against stress-related psychological distress.[98] Importantly, wisdom does not imply certainty or rigid conviction; rather, it involves the capacity to hold multiple perspectives, recognise limits of knowledge, and remain open to revision in light of new evidence or lived experience. This orientation aligns closely with the human need for truth, understood not as dogma but as an ongoing, reflective search for understanding.

Wisdom also exhibits deep synergies with other higher human needs. Truth and

knowledge provide the informational substrate for wise judgement, while beauty, creativity, and art cultivate sensitivity, imagination, and the ability to grasp meaning beyond literal facts. Justice and fairness shape the moral context within which wisdom is exercised, ensuring that decisions account for dignity, equity, and long-term social consequences. Virtue and generosity provide the motivational orientation that directs wisdom toward prosocial ends rather than narrow self-interest. In this sense, wisdom can be seen as an emergent property of a life and a society in which these higher needs are sufficiently supported and allowed to interact.

At the scale of the global population, neglecting social development and personal growth undermines not only individual wellbeing, but collective capacity for cooperation, learning, and long-term problem solving.

At the societal level, wisdom-related capacities are critical for addressing complex, long-term challenges. Collective wisdom involves the ability of institutions and cultures to integrate diverse forms of knowledge, manage value conflicts, learn from experience, and prioritise long-term consequences over short-term gains.[99] Research suggests that societies and organisations that encourage deliberation, humility, and plural perspectives are better equipped to resolve conflicts, avoid escalation, and make decisions that are robust under uncertainty.[100] These capacities are particularly important in the context of existential risks, biodiversity loss, climate change, and rapid technological transformation, where technical solutions alone are insufficient without wise governance and ethical judgement.

Within a flourishing lives framework, wisdom therefore functions as both an

individual aspiration and a system-level design criterion. It is an outcome supported by the fulfilment of other higher needs, but also a guiding principle that shapes how societies define progress, evaluate trade-offs, and govern innovation. Recognising wisdom as a core human need reframes development and sustainability not only as questions of efficiency or harm reduction, but as questions of judgement, orientation, and responsibility across generations. In this sense, wisdom represents the convergence point of flourishing lives, where knowledge, compassion, justice, creativity, and long-term care for people and planet come together.

any provider and supporter of enabling solutions such as mobility/ access, information/ knowledge, and energy should explore how they can deliver on human needs, rather than undermining them. Only providing a solution that sells, is fossil free/environmentally friendly is not enough in the 21st century.

4.3 Enabling solutions for human needs
In addition to these direct human needs enabling solutions are needed to ensure that flourishing lives are possible. Enabling systems for mobility, information, and energy are increasingly shaped by AI-driven optimisation, robotics, and advances in nanotechnology. These technologies can improve efficiency and access, but they also risk reinforcing centralisation, opacity, and dependence if not governed carefully. From a flourishing perspective, enabling technologies should enhance agency, accessibility, and resilience, ensuring that efficiency gains translate into flourishing lives for all, rather than increased productivity in destructive systems.

1. *Mobility/access*
   Mobility and physical access shape exposure to opportunities, social networks, services, and restorative environments. Limited mobility is associated with social isolation, reduced

employment and education opportunities, and poorer mental health outcomes. Walkable neighbourhoods and accessible public transport are linked to higher physical activity, lower depression risk, and stronger social cohesion. Reduced reliance on high-pollution transport modes also lowers exposure to air pollutants associated with cognitive decline and neuroinflammation. From a developmental perspective, children's independent mobility is associated with cognitive development, autonomy, and spatial skills. Equitable mobility systems therefore function as upstream determinants of both brain health and social participation.

2. *Information/Knowledge* agency. Education is one of the strongest predictors of long-term cognitive health and is associated with cognitive reserve, which can delay the onset of dementia symptoms despite neuropathology. Information environments also shape stress levels: exposure to misinformation, manipulative design, and high-intensity negative news cycles is associated with anxiety, attentional fragmentation, and reduced wellbeing. Conversely, high-quality knowledge ecosystems that support critical thinking, media literacy, and lifelong learning are associated with greater psychological resilience, civic participation, and adaptive capacity in the face of social and environmental change.

3. *Energy* Energy systems are fundamental enablers of modern life, affecting thermal comfort, lighting, communication, food systems, and healthcare delivery. Energy poverty, lack of access to reliable, affordable energy, is associated with chronic stress, poorer mental health, and reduced cognitive performance. At the

same time, fossil fuel–based energy systems contribute to air pollution and climate change, both of which are linked to adverse neurological and mental health outcomes. Clean, reliable, and equitably distributed energy systems can therefore reduce environmentally mediated stressors, improve living conditions, and support the cognitive and social functioning required for flourishing lives.

These enabling solutions are needed to ensure delivery on human needs, but can also be part of the problem. Currently they often help deliver "solutions" that are part of the problem, e.g. a large proportion of investments in mobility and energy systems are driven by economic models and lobbying from companies that result in support for unhealthy and unsustainable fast food and consumption of fast fashion. As individuals we are often influenced by companies that focus on selling as much as they can, rather than making the world a better place. As Tyler Durden famously said in Fight Club about "information" in our society:

"Advertising has us chasing cars and clothes, working jobs we hate so we can buy shit we don't need."[101]

Hence, any provider and supporter of enabling solutions such as mobility/ access, information/ knowledge, and energy should explore how they can deliver on human needs, rather than undermining them. Only providing a solution that sells, is fossil free/environmentally friendly is not enough in the 21st century.

4.4 Resources for human needs
The next category are "resources". Society will always have a need for physical resources, but there is a need to ensure that the resources we use actually deliver on human needs, and also that we use resources in an extremely resource efficient way in order to support a future where everyone can live a flourishing life on a flourishing planet.

4.5 Extended human needs

The final category are extended needs that include

2. *Nature/biodiversity*
Nature and biodiversity can be understood as having intrinsic value, independent of their usefulness to humans. Philosophical and ethical traditions in environmental thought argue that nonhuman life forms, species, and ecosystems possess moral standing in their own right, as unique expressions of evolutionary history and as participants in complex, self-organizing webs of life. From this perspective, biodiversity is not merely a resource but a community of life with its own trajectories, relationships, and forms of flourishing.

The biophilia hypothesis is often interpreted as evidence that humans have an evolved affinity for other living systems. While frequently discussed in terms of psychological benefit, biophilia can also be read normatively: the human capacity to recognize, feel connected to, and care about other life forms reflects an orientation toward the intrinsic worth of life beyond our species. This orientation supports ethical frameworks that regard the continued existence and flourishing of diverse species and ecosystems as a good in itself, not reducible to instrumental value.

Similarly, the Half-Earth proposal, which calls for protecting roughly half of the planet's land and sea to conserve biodiversity, is grounded in the intrinsic value of nonhuman life. The argument is not only that intact ecosystems support human wellbeing, but that other species and ecological communities have a right to continued existence and evolutionary potential. Preserving large, connected areas of the biosphere respects the autonomy and integrity of nonhuman nature, acknowledging that humans are one species among many in a shared evolutionary story.

Protecting large, connected areas of the biosphere while meeting the needs of 9–12 billion people requires moving beyond extractive models toward systems explicitly designed for coexistence.

Within a flourishing lives framework, recognizing the intrinsic value of nature and biodiversity broadens the moral horizon beyond human-centred outcomes. It situates human flourishing within a wider ethical commitment to the flourishing of life as a whole, where protecting biodiversity is an expression of respect, responsibility, and justice toward the more-than-human world.

3. *Reducing/ avoiding existential risks*
Existential risks, low-probability but high-impact threats that could cause large-scale societal collapse or human extinction are one of the most important challenges in the 21st century. They also have profound implications for mental wellbeing and collective flourishing. Chronic awareness of global catastrophic risks, including climate tipping points, nuclear conflict, pandemics, and uncontrolled technological hazards, is associated with anxiety, hopelessness, and reduced sense of agency, particularly among younger generations.

Frontier technologies such as synthetic biology, molecular machines, advanced AI, and neurotech introduce low-probability but high-impact risks alongside their potential benefits. These include biosecurity threats, unintended ecological interactions, cognitive manipulation, and concentration of power.

At a societal level, institutions capable of long-term risk reduction contribute to psychological security, social trust, and future-oriented thinking. Conversely, persistent instability and perceived lack

of control over global threats can increase stress-related morbidity and undermine the cognitive and social capacities needed for collective problem-solving. Reducing existential risks is therefore not only a matter of species survival but also of maintaining the psychological conditions necessary for meaningful, future-oriented human lives.

In reality most initiatives and innovations deliver on multiple levels, and/or undermine on multiple levels, hence a mapping of human needs, enabling solutions and resources is needed to understand the full impact, and where new innovations are needed.

4.6 Using FLYs as a design tool
A simple operational cycle can help translate FLYs into system design practice.

1. Define the flourishing objective for the population and context.
   Specify which dimensions of flourishing are prioritized and why, and whose flourishing is currently constrained.
2. Map the system producing current outcomes.
   Identify infrastructures, institutions, business models, and information environments that shape behaviour and wellbeing.
3. Identify intervention levers.
   Focus on high-leverage points: goals, rules, incentives, information flows, and capability-building, not only technical efficiency.
4. Estimate expected FLY impacts and uncertainties.
   Use best available evidence, express impacts fractionally, and communicate uncertainty transparently.
5. Iterate through portfolio governance.
   Rebalance funding, procurement, regulation, and standards based on observed impacts and learning.

This cycle connects wellbeing science to innovation governance in ways that allow for action among key stakeholders, both in the traditional innovation ecosystem and among those providing flourishing lives in globally sustainable ways, from the cultural and knowledge sectors to outdoor and health leaders.[102]

Designing for Flourishing Life-Years requires estimating impacts across the global population, rather than optimising outcomes for narrow user groups or early adopters. Delivering flourishing lives at scale requires not only new technologies, but business model innovation that aligns revenues with human and planetary outcomes.

Incubators offer ideal environments for testing, iterating, and refining FLY-based design assumptions. Start-ups can rapidly test new combinations of technology, services, and business models that support flourishing lives.

Flourishing Life-Years provide a practical lens for evaluating emerging technologies—including AI, robotics, neurotech, virtual reality, synthetic biology, and advanced materials—based on their actual contribution to human wellbeing over time. Rather than asking whether a technology is innovative or efficient, FLYs ask whether it measurably supports health, autonomy, meaning, social connection, and ecological stability. This enables policymakers, investors, and innovation ecosystems to distinguish technologies that genuinely expand flourishing from those that merely scale activity or consumption.

An expanded post-SDG agenda with focus on flourishing lives on a flourishing planet bring a positive vision into focus. Harm reduction will remain essential, but it is not enough to guide rapid and systemic innovation. Flourishing Life-Years provide a design criterion that can align mission-oriented policy, responsible innovation governance, and Half-Earth thinking into a coherent agenda. In a world of abundance and disruption, the defining question is no longer only how to reduce harm, but how to design systems that reliably generate flourishing lives for all on a flourishing planet.
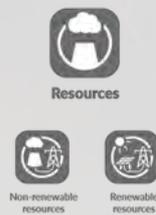
Solutions delivering directly on Human Needs

Spaces / Protection

Protection / Shelter | Right temperature / Clean air | Light

Physical space | Virtual space

Nutrition / Health

Healthy nutrition | Water sanitation | Preventative care / Exercise

Health care

Social development / Personal growth

Virtue / Generosity | Truth / Equity | Recreation / Exploration | Beauty / Creativity | Wisdom

Justice / Fairness | Inspiring art

Enabling solutions potentially delivering on Human Needs

Mobility / Access | Information / Knowledge | Energy

Access people | Access things | Access information | Human need based data | Privacy

Physical access | Virtual access

Resource solutions potentially delivering on Human Needs

Resources

Non-renewable resources | Renewable resources

Extended Needs

Reducing / Avoiding existential risks | Nature / Biodiversity

Figure 2: Categories relevant for flourishing lives on a flourishing planet

5. Defining Flourishing Life-Years (FLYs)

Flourishing Life-Years build on an expanding interdisciplinary consensus that societal progress cannot be adequately captured by economic output or reductions in harm alone. Instead, progress must be evaluated in terms of whether people are able to live lives that are healthy, meaningful, socially connected, and capable of growth over time.

A Flourishing Life-Year represents one year of human life in which basic needs are securely met, and higher-order human capacities are meaningfully expressed. It is a synthetic accounting unit designed for population-level analysis, combining empirical evidence with explicit normative commitments. FLYs are not intended to capture every aspect of human experience, but to provide a coherent and usable measure of lived human value over time.

This approach explicitly moves beyond narrow hedonic or income-based metrics and aligns with earlier normative frameworks such as the capability approach, which emphasizes real freedoms and opportunities rather than utility alone.

A Flourishing Life-Year (FLY) is a quantitative unit that represents one year of human life in which an individual's basic needs are consistently met, and a substantial set of higher-order capacities and functioning are realized. This encompasses not only physical survival and material sufficiency, but also psychological, social, and ethical dimensions of wellbeing. This can also be divided into smaller units and contributions,

Specifically, a flourishing life is time in which:

I.   **Basic human needs,** including physiological needs (adequate nutrition, shelter, health, and safety) and foundational social needs (secure relationships and freedom from severe deprivation), are satisfied at a level that enables autonomous agency. This corresponds to the "deficiency needs" in human developmental frameworks such as humanistic psychology and parallels the core domains of wellbeing recognized by international wellbeing measurement initiatives.

II. **Higher-order capacities and potentials** are cultivated, supported, and expressed. These include:
   a. Mental flourishing and cognitive plasticity: The capacity for learning, psychological adaptability, and sustained engagement with life challenges;
   b. Meaning and purpose: The sense that one's life has direction, coherence, and is aligned with personally significant goals;
   c. Character and virtue: Patterns of behaviour and motivation that embody ethical motivation, resilience, and integrative self-regulation;
   d. Creativity and self-expression: The ability to generate novelty, contribute to cultural or intellectual life, and engage in activities that extend beyond instrumental survival.

This definition integrates multiple strands of wellbeing science. It builds on the Human Flourishing Program at Harvard University, which emphasizes flourishing as a multidimensional state that includes not only happiness and life satisfaction, but also mental and physical health, meaning and purpose, character and virtue, and close social relationships.[103]

The approach is also consistent with the OECD's measurement of wellbeing and progress, which situates life satisfaction, health, education, social connections, environmental quality, and subjective wellbeing as core indicators of how societies enable individuals to live well. In the OECD

framework, wellbeing encompasses both current life conditions and opportunities for future wellbeing.[104]

The concept also aligns with broader wellbeing economics frameworks such as those promoted by the Wellbeing Economy Alliance[105] and Wellbeing Economy Forum[106], which argue that economic systems should be evaluated in terms of their ability to support human and ecological wellbeing, rather than solely in terms of GDP growth. According to these frameworks, flourishing entails both the fulfilment of fundamental needs and the opportunities for individuals and communities to thrive in meaningful, participatory, and creative lives.[107]

This definition incorporates four core principles derived from the flourishing and wellbeing literature:

1. **Multidimensional**
   Flourishing is not reducible to health status or subjective happiness alone. It reflects multiple interacting domains of life, including mental and physical health, meaning, social connection, and agency.[108]

2. **Partial and fractional**
   Improvements in flourishing can be expressed fractionally. For example, a sustained improvement equivalent to 0.05 of a fully flourishing year corresponds to 0.05 FLY.[109]

3. **Persistence over time**
   Only improvements expected to persist beyond short-term fluctuations are counted. This reflects evidence that structural, environmental, and institutional changes shape long-run wellbeing trajectories.[110]

4. **Population relevance**
   FLYs are designed for also evaluating system-level interventions that affect groups and societies, rather than individual clinical outcomes alone.[111]

In addition, the concept is framed under the idea of "flourishing lives for all on a flourishing planet" that require two additional criteria to meet the definition:

1. **Inclusion of all people**[112]
   The flourishing must be inclusive across populations, social groups, and generations. Flourishing Life-Years cannot be counted where gains for some depend on the systematic exclusion, exploitation, or marginalization of others. This includes exclusion based on income, gender, age, disability, ethnicity, migration status, or geographic location. From a wellbeing science and ethics perspective, flourishing is fundamentally relational and societal: individuals' opportunities to flourish are shaped by social institutions, power structures, and access to shared resources.

   This criterion draws on the capabilities approach, which emphasizes that justice and development should be assessed in terms of people's real freedoms and opportunities to live lives they have reason to value, rather than aggregate outcomes alone. It also aligns with empirical evidence from social epidemiology and wellbeing research showing that high inequality undermines population-level wellbeing, social trust, mental health, and long-term resilience, even among relatively advantaged groups.

   Accordingly, Flourishing Life-Years must reflect improvements that expand

capabilities and opportunities broadly across society. Interventions that raise average wellbeing while entrenching structural inequality, eroding social cohesion, or concentrating agency and power in a narrow segment of the population do not qualify as contributing to flourishing lives for all.

2. **Half-Earth and all life compatible[113]**
   Flourishing Life-Years must be compatible with a flourishing biosphere. Human flourishing cannot be defined independently of the ecological systems that sustain life, health, and long-term wellbeing. This criterion reflects the growing consensus in sustainability science that a vision for a flourishing planet cannot use planetary boundaries as guidance as that only tells us when biological systems collapse, there is a need for a concept like Half-Earth that provide guidance for how humans, other living being and the ecosystem can live together.

   The Half-Earth framing highlights the need to preserve sufficient space, integrity, and functional capacity for non-human life to thrive, recognizing biodiversity as a core contributor to ecosystem resilience, climate regulation, disease buffering, food security, and psychological wellbeing. From this perspective, flourishing is not merely low-carbon or resource-efficient living, but living within ecological limits in ways that maintain the diversity and vitality of life on Earth.

Consequently, Flourishing Life-Years cannot be generated through pathways that systematically degrade ecosystems, accelerate biodiversity loss, or lock societies into environmentally destructive trajectories, even if short-term human wellbeing improves. Only forms of human development that are compatible with long-term planetary stability and the co-flourishing of human and non-human life meet the definition of flourishing lives on a flourishing planet.

In summary, flourishing lives for all on a flourishing planet reflects not only the absence of deprivation, but the presence of enabling conditions and realized capacities for psychological, social, and ethical flourishing.

FLYs can be used to guide and compare business model innovation, distinguishing models that scale wellbeing from those that merely scale consumption. Using FLYs allows funders and policymakers to distinguish start-ups that scale wellbeing from those that merely scale usage.

FLY is also a measure for a better future for everyone and not only a few, as well as ensuring that human flourishing and non-human flourishing goes hand in hand for a future where all life flourishes. It is intended as a comprehensive framework to identify and support actions that support human wellbeing that can be quantified, aggregated, and compared across populations and policy scenarios.

6. Relationship to existing wellbeing and health metrics

Flourishing Life-Years (FLYs) are conceptually and methodically related to, but expanded from, established health economics measures:

- Quality-Adjusted Life Years (QALYs) focus primarily on health status and functioning.[114]
- Disability-Adjusted Life Years (DALYs) measures years lost due to disease or disability.[115]
- Health-Adjusted Life Expectancy (HALE) measures expected years lived in full health.[116]
- The Human Development Index (HDI) is a United Nations measure comparing countries' average achievements in health (life expectancy), education (schooling years), and standard of living (GNI per capita)[117]
- Subjective Wellbeing (SWB) asks people how they feel and has empirical links to income, health, environment, and social trust.[118]
- The Global Flourishing Study (GFS) measures global human flourishing in six areas: Happiness and life satisfaction, Mental and physical health, Meaning and purpose, Character and virtue, Close social relationships, Material and financial stability.[119]
- Better Life Index from OECD lets individuals visualise and summarise the key well-being factors that matter most to them[120]

6.1 Comparison of wellbeing and life-year metrics & Flourishing Life-Years

Metric	Primary focus	Unit / level	What it captures	Key limitations	How it differs from / contributes to FLYs
Quality-Adjusted Life Years (QALYs)	Health status and functioning	Individual life-years, clinical	Physical and mental health outcomes; cost-effectiveness of medical interventions	Narrow health focus; weak on meaning, agency, social life, environment; clinical framing	FLYs build on QALYs but extend beyond health to include meaning, creativity, relationships, and lived context
Disability-Adjusted Life Years (DALYs)	Disease burden and disability	Population health loss	Burden of disease; comparison across illnesses and countries	Deficit-based; measures loss, not positive wellbeing; no higher-order needs	FLYs invert the logic from loss-based to value-creation-based (years of flourishing gained)
Health-Adjusted Life Expectancy (HALE)	Healthy longevity	Population expectancy	Expected years lived in full health	Descriptive; health-only; no experiential or social dimensions	FLYs complement HALE by asking how well those years are lived, not only whether they are healthy
Human Development Index (HDI)	Socio-economic development	Country-level index	Cross-country comparison of life expectancy, education, income	Coarse; no distributional, experiential, or environmental detail	FLYs operate at finer granularity, linking lived experience and system change rather than national averages
Subjective Wellbeing (SWB)	Experienced life evaluation	Individual / population scores	How people feel about their lives; strong empirical links to income, health, trust, environment	Subjective only; sensitive to adaptation and framing; not life-year based	FLYs integrate SWB but anchor it in life-years and structural conditions
Global Flourishing Study (GFS)	Multidimensional flourishing	Individual & population	Happiness, health, meaning, virtue, relationships, material stability	Not directly life-year-based; not designed for economic or climate integration	FLYs translate GFS-type flourishing into a life-year unit usable in system analysis
OECD Better Life Index	Quality of life across domains	Population / policy dashboard	Material conditions, health, education, environment, social connections	Indicator dashboard, not a single integrative metric; no life-year unit	FLYs can be seen as a life-year synthesis of OECD wellbeing domains

Table 1: Comparison of wellbeing and life-year metrics & Flourishing Life-Years

6.2 Operationalising FLYs in applied analysis

In applied policy and systems analysis, FLYs are estimated through four steps:

1. Identify pathways to flourishing
   Examples include increased physical activity, improved mental health, enhanced access to education and culture, reduced stress, stronger social ties, and increased sense of meaning.[121]
2. Estimate affected populations
   Only population groups plausibly experiencing sustained change due to the intervention are included.
3. Estimate magnitude of flourishing change
   Changes are expressed as fractions of a full flourishing year, informed by empirical evidence on wellbeing determinants.[122]
4. Aggregate across populations and time
   Annual FLYs represent the total flourishing generated per year, with longer-term effects treated explicitly rather than discounted away prematurely.

This approach allows FLYs to function as a bridge metric linking human wellbeing outcomes with innovation, sustainability, well-being, resource, and economic performance indicators.

6.3 Relevance for innovation and sustainability policy

A central challenge in innovation and sustainability policy is that many high-wellbeing outcomes are poorly captured by conventional metrics, while resource-intensive activities often appear economically beneficial despite undermining long-term human flourishing.

FLYs address this gap by:
- Making wellbeing gains explicit and measurable
- Enabling comparison between flourishing generated and planetary impact avoided
- Supporting a shift from problem reduction toward net-positive societal outcomes

In this sense, FLYs complement avoided emissions and avoided material use, enabling assessment of how effectively societies convert planetary resources into lived human flourishing.[123]

6.4 Interpretation and limitations

FLYs are not intended to provide exact or universal valuations of human experience. Key limitations include dependence on empirical assumptions, cultural variation in flourishing, and uncertainty in long-term projections.

Accordingly, FLYs should be interpreted as order-of-magnitude indicators designed to support strategic decision-making and comparison across interventions, rather than as precise welfare accounting tools.

7. Practical First Steps to Deliver Flourishing Lives

A first step for organisations to deliver flourishing lives is often to collect information about peoples reflected needs and wishes, rather than rely on simple market signals or polling data. Below the use of New Year's resolutions and a mental pollution/flourishing mind tool are presented. Both provide opportunities for gathering information that can be used to ensure deliver towards reflected needs in support of flourishing lives.

7.1 New Year's resolutions

New Year's resolutions, and similar reflected need collections, are often treated as symbolic rituals, yet they illustrate a well-documented mechanism in behavioural science. Salient temporal landmarks (for example, the start of a new year, a birthday, a move, the birth of a child, or a new job) can increase motivation to think more long-term because they segment time into psychologically meaningful "new beginnings." Such "fresh starts" can reduce the motivational weight of past lapses, support identity-based change, and increase goal initiation at predictable calendar moments.[124]

For a flourishing-oriented agenda, the main value is not the event itself, but the structured reflection it can trigger. Resolution-style lists can serve as compact "reflected needs" inventories: they help individuals articulate what they want over the long run (for example, meaning, relationships, competence, physical vitality, nature connection, and increased autonomy). When goals are self-endorsed and aligned with basic psychological needs, motivation and persistence are typically stronger than when behaviour is driven primarily by external pressure or short-term incentives.[125]

This matters because many everyday choice environments disproportionately reward short-term engagement. Reward-based systems are sensitive to

immediacy, novelty, salience, and social signals; these features can be leveraged by digital and commercial environments to promote frequent checking, impulse purchases, and attention capture. In aggregate, this can create a structural mismatch: business models that optimise for short-run engagement may undermine long-horizon determinants of flourishing such as sleep, sustained attention, stable relationships, physical activity, and mental balance.[126]

A useful way to frame resolution-style lists, therefore, is as a counterweight to short-term reward optimisation. They can function as a governance device at multiple levels, e.g. business-, organisational-, and policy governance, that periodically re-anchors decisions in long-term human needs and

TOP 10 NEW YEARS RESOLUTIONS

An opportunity to deliver on reflected needs in support of flourishing lives

NEW YEARS RESOLUTIONS		STARTED	IN PROGRESS	COMPLETE	IMPACT LEVEL
REDUCE STRESS		☐	☐	☐	
SPEND LESS TIME ON SOCIAL MEDIA		☐	☐	☐	
SPEND MORE TIME WITH FRIENDS AND FAMILY		☐	☐	☐	
EAT HEALTHIER		☐	☐	☐	
SAVE MONEY		☐	☐	☐	
LOSE WEIGHT		☐	☐	☐	
IMPROVE MENTAL PERFORMANCE		☐	☐	☐	
CUT DOWN ON ALCOHOL		☐	☐	☐	
QUIT SMOKING/ VAPING		☐	☐	☐	
EXERCISE MORE		☐	☐	☐	

Figure 3: New Years resolutions for flourishing lives

measurable outcomes. However, the evidence on behaviour change is also clear that intentions alone are insufficient: the intention-behaviour gap is robust, and follow-through typically requires supportive environments, feedback, and social reinforcement.[127]

Using resolution-style lists as a tool for cities, companies, and organisations

A resolution-style list becomes materially more powerful when treated as a design input for systems, not merely a motivational statement. In practice, cities, companies, and organisations can use periodic "fresh start" moments, e.g. annual planning cycles, budget resets, new leadership, new procurement rounds, strategy refreshes, reporting milestones, to do three things in a structured way:

1. *Elicit reflected needs and prioritise them*
   Collect structured inputs on what residents, users, customers, employees, and communities identify as their long-term needs and constraints. This can be done through surveys and deliberative formats, complemented by validated wellbeing measures. The point is to avoid confusing "what is most engaging today" with "what supports flourishing over years."[128]

2. *Translate priorities into specific commitments and choice architecture*
   Commitments should be expressed as behaviours and service design choices, not slogans. Implementation intentions (if-then planning), default options, reduction of friction for desired behaviours, and improved feedback loops are consistently supported mechanisms for turning intentions into action.[129]

3. *Measure, learn, and iterate*
   Treat the resolution list as a hypothesis about what will improve flourishing and reduce harms. Monitor outcomes using validated measures (for example, life evaluation, affect, and eudaimonia

modules) and service-level indicators (uptake, retention, equity of access), then iterate.[130]

Concrete examples illustrate how this can work across sectors:

- Cities can use annual "civic resolutions" to guide how services are delivered by shifting from information campaigns to environment design. If a city's reflected priorities include mental health, social connection, and low-carbon mobility, it can redesign defaults and infrastructure so that walking, cycling, and public transport are easier, safer, and more socially normal, while expanding access to nearby nature, outdoor recreation, and community spaces. This is consistent with evidence linking physical activity and nature exposure to mental health and wellbeing outcomes.[131]

- Companies can treat "customer flourishing" and "attention-respectful design" as explicit resolution domains that shape product requirements. In practice, this means designing interfaces and services that reduce exploitative engagement loops, support self-regulation, and promote long-horizon customer outcomes. Evidence on digital wellbeing is nuanced and heterogeneous, but it supports the view that some forms of use and high levels of screen exposure are associated with harms for some outcomes and populations, which justifies precautionary design and better measurement.[132]

- Organisations (including hospitals, universities, NGOs, and public agencies) can use resolution cycles to align internal routines with wellbeing and performance determinants. This can include defaults that protect time for focused work and recovery, norms that reduce chronic overload, and

service models that make "healthy choices" easier for clients and staff. The Behaviour Change Wheel provides a practical structure for mapping interventions to capability, opportunity, and motivation, which helps avoid over-reliance on awareness campaigns and instead emphasises system-level levers.[133]

This approach also fits naturally with a flourishing framing: rather than focusing only on reducing harm, the resolution cycle can operationalise "positive delivery" by identifying which services, environments, and social norms actively enable meaning, relationships, learning, autonomy, and mental balance, while simultaneously reducing ecological pressures through co-benefit behaviours (for example, active mobility and time in nature).[134]

Eight key benefits of New Year's resolutions (and similar reflective lists) when used as a system tool:

1. Temporal landmark advantage
Creates predictable "motivation spikes" that increase willingness to initiate change and adopt identity-consistent goals.

2. Clarifies long-horizon priorities
Forces a distinction between short-term urges and long-term needs, which is central when environments reward immediacy and novelty.

3. Makes goals measurable and discussable
A list can be translated into indicators and tracked over time, enabling governance rather than aspiration. Using validated wellbeing measurement guidance reduces the risk of ad hoc metrics.

4. Supports equity and segmentation
Cities and organisations can create different "resolution pathways" for different constraints and starting points, improving inclusiveness (for example, ensuring that nature access or active travel options are feasible for more groups).

5. Improves follow-through via planning prompts
Resolution lists can be built around if-then plans, triggers, and coping plans, which increases the probability that intentions become behaviour.[135]

6. Shifts the locus from willpower to design
Encourages a move away from blaming individuals for "lack of discipline" and toward redesigning defaults, friction, cues, and feedback loops. This aligns with modern behaviour change frameworks.[136]

7. Reinforces social norms and collective accountability
Public or team-based lists can make healthier and more sustainable behaviours socially supported, which improves persistence beyond the initial motivation window.

8. Creates an iteration loop for learning and innovation
Annual or quarterly cycles make it legitimate to run experiments, evaluate outcomes, drop what does not work, and scale what does. Habit formation evidence suggests that repetition over time is central, and cycles help maintain that repetition and adaptation.[137]

7.2 Flow- Mental Pollution Assessment[138]
An example of how brain science can be used to identify ways to deliver on human needs in ways that support flourishing lives is the Flow-Mental Pollution Assessment, which translates neuroscience and behavioural science into an organisational diagnostic tool.

The core premise is simple: if flourishing depends partly on sustained capacities such as attention, learning, self-regulation, and social connection, then organisations should measure whether their environments systematically *support* these capacities or systematically *deplete* them. Chronic depletion is not only a "wellbeing" issue; it is a predictable pathway to reduced cognitive performance, weaker judgement, and lower persistence, because stress and overload reliably impair executive functions mediated by the prefrontal cortex.[139]

flow is commonly operationalised using validated instruments such as the Work-Related Flow Inventory (WOLF), which measures absorption, work enjoyment, and intrinsic work motivation..[140]

Flow is not merely pleasant; across studies it is associated with both work outcomes and personal outcomes, and it appears responsive to conditions such as resources, autonomy, feedback quality, and manageable demands.[141]

2. "Mental pollution" as a structured label for predictable cognitive and affective load drivers.
The term "mental pollution" can be treated as a practical umbrella for well-studied exposures that fragment attention, increase cognitive load, and elevate stress.[142] Examples include information overload, low-quality information environments, excessive
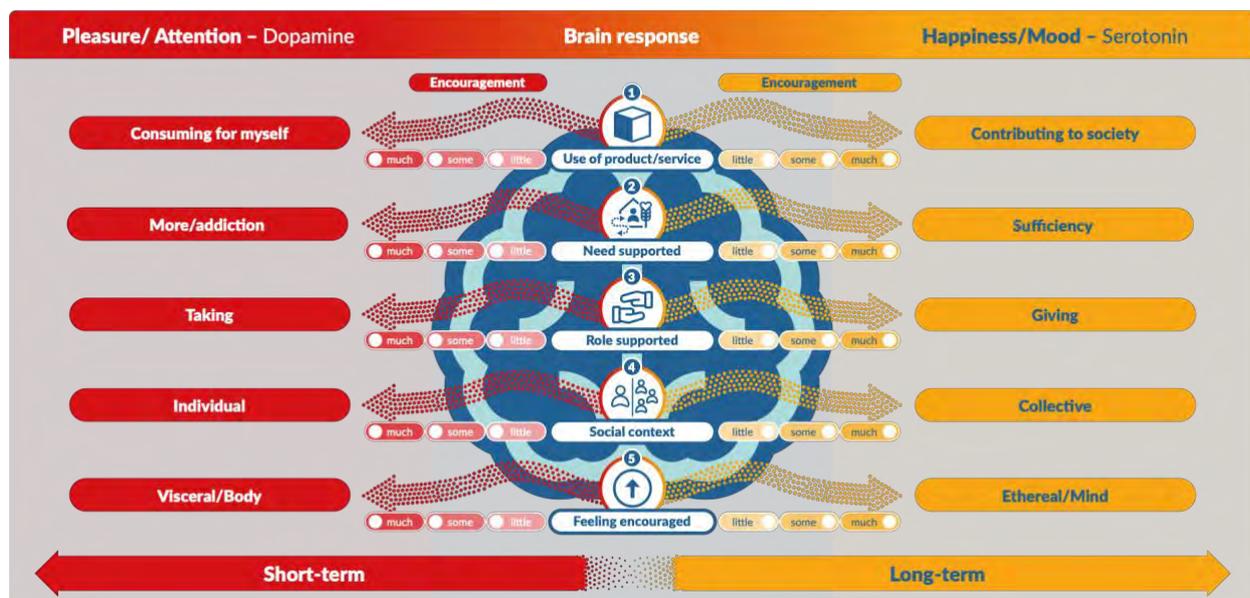
Figure 4: Brain science-based assessment tool for flourishing lives

The assessment combines two evidence-based lenses:

1. Flow as an indicator of high-quality engagement and capability support.
Flow refers to an optimal state of deep absorption, enjoyment, and intrinsically motivated effort. In organisational settings,

interruptions, and technology-driven stressors (often discussed as technostress).[143]

Importantly, research on digital technology and wellbeing is nuanced: average associations can be small and heterogeneous, which strengthens the case for measurement

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and segmentation rather than one-size-fits-all claims.[144]

Framed this way, the assessment avoids two common errors: (i) treating wellbeing as an abstract aspiration rather than a measurable system property, and (ii) assuming that "more engagement" is automatically good. The goal is not maximum time-on-task, but high-quality engagement that supports autonomy, competence, and relatedness, which are repeatedly linked to stronger internal motivation and psychological functioning.[145]

A Flow- Mental Pollution Assessment becomes actionable when it is treated as a recurring diagnostic cycle (for example quarterly, annually, or tied to planning and procurement cycles) that identifies where environments create "deep capability" versus "reactive coping."

1. *Measure flow and mental pollution in the specific context where you deliver services*
   Use short, validated modules rather than bespoke items where possible. For workplaces, WOLF provides a direct measure of flow at work.[146] For mental pollution, organisations can use a small set of exposure indicators such as perceived overload, interruption frequency, after-hours intrusion, and technostress creators, drawing on the technostress literature.[147] In city contexts (schools, libraries, youth centres, transport systems, digital public services), analogous items can be used to capture attention fragmentation, information anxiety, and perceived cognitive burden.[148]

2. *Diagnose the system, not the person: map conditions to demands and resources*
   The point is to locate *where* the environment makes flourishing easier or harder. A practical structure is to interpret results using a demands-resources logic: excessive demands without balancing resources reliably increase strain and burnout risk, while resources can buffer demands and support engagement.[149] This shifts the conversation away from "lack of resilience" and toward redesigning workload, autonomy, feedback loops, and coordination costs.

3. *Translate diagnosis into design requirements and guardrails*
   Interventions should be expressed as concrete system changes. For increasing flow, this often includes clearer goals, faster feedback, more autonomy over sequencing, protected time for deep work, and better challenge-skill matching.[150] For reducing mental pollution, common levers include reducing interruptions, simplifying information architectures, limiting unnecessary alerts, and reducing role ambiguity and digital overload.[151]

4. *Track outcomes and unintended effects, then iterate*
   Two cautions matter. First, stress-related impairment of executive function can appear quickly under acute uncontrollable stress, and more prolonged exposures can produce longer-lasting costs.[152] Second, flow itself is not an unconditional good: some evidence suggests potential "tunnel vision" carry-over effects after flow ends, which means the system should protect recovery and switching capacity rather than optimising immersion at all costs.[153] The diagnostic cycle should therefore include recovery proxies (sleep, workload volatility, after-hours intrusion) and equity segmentation, not only averages.

Concrete examples illustrate how this can work across sectors:
- Cities can apply the assessment to learning and participation environments: schools, libraries, youth centres, permitting processes, and digital public services. If residents report high cognitive burden and low agency when navigating

services, the city can redesign information architecture, reduce bureaucratic "context switching," and create calmer, more legible service journeys. The aim is to reduce information anxiety and overload while enabling competent, self-directed action.[154]

- Companies can treat "attention-respectful design" and "customer capability support" as measurable requirements. Because digital effects are heterogeneous and often small on average, responsible practice is to identify which user groups and use patterns show harm signals (sleep disruption, compulsive checking, stress) and redesign features accordingly, rather than arguing from ideology.[155]

- Organisations (science centres, hospitals, universities, NGOs, public agencies) can use the tool to detect where coordination overhead, interruption culture, and digital overload erode judgement and learning. Redesign can include protected deep-work blocks, fewer parallel priorities, improved role clarity, and better feedback cadence. This aligns with evidence that high demands without sufficient resources predict strain, while resources support engagement.[156]

  Eight key benefits of Flow- Mental Pollution Assessment when used as a system tool include:

1. *Makes "flourishing capacity" measurable*
   Turns abstract goals (attention, learning, self-regulation) into trackable system indicators using validated constructs.[157]

2. *Separates high-quality engagement from exploitative engagement*
   Distinguishes deep, need-supportive engagement (flow) from short-cycle compulsive use driven by overload and interruption patterns.[158]

3. *Improves performance and wellbeing through the same levers*
   Targets conditions that are consistently linked to both wellbeing and performance outcomes in the flow literature and meta-analytic evidence.[159]

4. *Reduces blame and increases design accountability*
   Reframes problems from "people lack discipline" to "systems create overload," consistent with demands-resources evidence.[160]

5. *Supports equity through segmentation*
   Because digital and workload impacts are heterogeneous, the tool encourages identifying which populations and roles carry the burden, rather than relying on averages.[161]

6. *Highlights early-warning signals for cognitive risk*
   Connects chronic overload and stress to known mechanisms that degrade executive function and decision quality, supporting preventative governance.[162]

7. *Creates procurement and product requirements that protect minds*
   Enables organisations to specify measurable constraints on interruption load, information complexity, and after-hours intrusion, while requiring features that support autonomy and competence.[163]

8. *Builds an iteration loop for learning and innovation*
   By repeating measurement and redesign cycles, organisations can test which environmental changes increase flow and reduce mental pollution over time, and scale what works.[164]

7.3 From products to systems and flourishing lives

Delivering flourishing lives cannot be achieved through better products alone. A substantial share of non-flourishing outcomes is produced upstream of individual choice, embedded in cultural norms, market incentives, institutional routines, and policy frameworks that systematically shape what people are exposed to, rewarded for, and nudged toward. As a result, marketing, lobbying, public communication, and agenda-setting play a decisive role in defining what societies perceive as desirable, normal, and aspirational, often with effects that extend far beyond the direct use of any single product or service.

A large body of research in social norms, cultural change, and behavioural science shows that collective expectations exert strong influence on individual behaviour, often independently of personal attitudes. Descriptive norms (what people perceive others to be doing) and injunctive norms (what people believe is socially approved) reliably shape consumption, effort, and risk-taking across domains.[165]

When dominant commercial narratives repeatedly associate success with high material throughput, speed, constant availability, and stimulation, they reinforce behavioural patterns that can undermine mental wellbeing, sustained attention, social connection, and ecological stability, even when individuals express different long-term preferences.[166]

This gap between expressed long-term preferences and short-term behavioural reinforcement highlights why change cannot be reduced to individual choice or isolated product improvements. Addressing it requires a clearer distinction between different levels of intervention: improving the products offered within existing systems, redesigning the systems that shape everyday behaviour, and ultimately redefining the societal goals against which success is judged. The sections that follow therefore introduces two additional steps beyond product substitution.

Step 1: Product substitution
Product substitution improves the performance profile of what already exists (for example, lower-impact materials, higher efficiency, safer interfaces), but it typically leaves intact the surrounding regime: user practices, infrastructures, standards, business models, and cultural meanings that determine scale and rebound.

The defining challenge of the coming decades is not whether new technologies, from AI to brain science, will continue to advance, but whether societies can cultivate the wisdom required to govern them well. Flourishing lives on a flourishing planet demand that technological power be matched with judgement, restraint, and ethical orientation. In this sense, technology policy becomes inseparable from questions of human development, collective wisdom, and responsibility toward future generations rather than make current products better.

Sustainability transition research emphasises that major societal functions (mobility, food, housing, information) are delivered by socio-technical systems, not stand-alone artefacts, and that incremental artefact improvements often fail to shift system trajectories when the broader regime keeps rewarding volume, speed, and short-horizon optimisation.[167] In other words, Step 1 can reduce harm per unit, yet still reproduce non-flourishing outcomes if the system continues to amplify overload, chronic time pressure, or high material throughput.

Step 2: System substitution
System substitution targets the delivery architecture itself, replacing a product-centric logic with a service and system logic that reconfigures technology, infrastructure, institutions, and norms together. In transitions terms, this requires changes across multiple levels: protected experimentation in niches, pressure and learning that destabilise incumbent regimes, and governance

processes that coordinate long-term directionality.[168]

Practically, Step 2 is where marketing and policy engagement become decisive: organisations move from selling "better units" to helping build environments where healthier, lower-impact, capability-supporting behaviours are the default, supported by infrastructure, pricing, standards, and information flows. This step is less culturally familiar because it requires institutional coordination and challenges incumbent incentive structures, but the literature is clear that durable change comes from co-evolution of technology with rules, practices, and meanings, not from product performance alone.

Step 3: Flourishing lives for all
The final shift is from "better system performance" to explicit normative and measurable ends: whether people's lived capabilities and life quality improve broadly and fairly, within ecological limits. This aligns with the capability approach in development and justice, which evaluates progress by what people are effectively able to be and do, not only by income or consumption.[169] It also aligns with the wellbeing measurement agenda that argues GDP is insufficient and that policy and organisational success should be assessed using multidimensional indicators of quality of life.[170]

In a flourishing framework, Step 3 requires explicitly designing for domains such as meaning, relationships, health, character, and financial security, while also respecting biophysical boundaries that define a safe operating space for humanity. VanderWeele, 2023). That combination is what differentiates "system substitution" from "flourishing delivery": Step 2 changes the machinery; Step 3 changes the objective function and accountability, including equity, lived experience, and planetary stability.

This dynamic is reinforced by market structures that prioritise short-term engagement, growth, and visibility. Evidence from psychology and economics suggests that environments optimised for immediacy and novelty tend to favour short-horizon rewards over long-term capability building, creating systematic misalignment between what is profitable in the short run and what supports flourishing over time.[171] Importantly, this misalignment is not primarily a matter of individual weakness, but of system design: repeated exposure to certain signals, defaults, and incentives predictably shapes habits, aspirations, and norms at scale.

Organisations that commit to flourishing-oriented strategies can therefore extend their role beyond incremental product improvement toward shaping the systems within which products are designed, marketed, and governed. This includes three interrelated domains: responsible marketing and communication, value-shaping cultural signals, and policy engagement that aligns incentives with long-term wellbeing.

First, **marketing and communication** function as powerful norm-setting mechanisms. Advertising does not merely inform; it conveys implicit messages about status, identity, time use, and what constitutes a "good life." Research on materialism shows that persistent exposure to materialistic value cues is associated with lower wellbeing, weaker relationships, and higher anxiety, while intrinsic and relational values are associated with better psychological outcomes.[172]

Flourishing-oriented organisations can therefore use brand platforms to elevate narratives centred on mental flourishing, shared experiences, competence, learning, and sufficiency, rather than constant upgrading or acceleration. The aim is not moralising restraint, but broadening the space of socially recognised aspirations.

Second, **value-shaping communication** can normalise healthier relationships with technology, consumption, and time. Evidence from social norm interventions shows that when alternative behaviours are framed as

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common, legitimate, and socially supported, adoption increases without relying on coercion or guilt.[173] This applies equally to norms around availability, pace of work, digital use, and consumption intensity. Organisations that publicly model boundary-respecting practices, attention-respectful design, and long-horizon customer outcomes contribute to shifting expectations across markets and sectors.

Third, **policy advocacy and institutional alignment** matter because many determinants of flourishing sit outside the control of individual firms. Wellbeing research increasingly shows that macro-level factors such as job security, time pressure, access to green space, transport systems, and social protection have strong effects on mental health and life satisfaction.[174]

Organisations can use their influence to support policy frameworks that internalise long-term costs and benefits, align economic incentives with wellbeing outcomes, and reduce structural pressures that drive overconsumption and chronic stress. This includes supporting wellbeing-oriented metrics, labour standards that protect recovery and predictability, and infrastructure investments that enable low-carbon, high-quality lives.

These actions operate at the level of systems and cultural signals rather than isolated transactions. They reshape the informational and normative environment within which individual choices are made, thereby complementing individual-level tools such as wellbeing-oriented goal cycles and mental

pollution assessments described earlier in this chapter. Importantly, they also address the intention-behaviour gap by changing what is easy, visible, rewarded, and socially validated.

From a systems perspective, such shifts are not marginal. Systems theory highlights that changes in goals, information flows, and norms are among the highest-leverage intervention points in complex systems.

While adjusting parameters or improving efficiency can yield incremental gains, redefining what success looks like and how it is communicated can redirect entire systems over time. When influential organisations alter how they define value, success, and progress, they propagate new expectations through supply chains, professional communities, and policy arenas.

In this sense, early steps toward delivering flourishing lives, such as aligning marketing with flourishing values, adopting wellbeing-oriented performance cycles, and engaging in responsible policy advocacy, should not be seen as peripheral or symbolic. They function as system signals that help reorient economic and social activity away from optimising short-term consumption and toward cultivating the conditions for long-term human and planetary flourishing.

Over time, a three step approach to change can accumulate into durable shifts in norms, incentives, and institutional priorities, creating environments in which flourishing becomes not an exception, but the default outcome.

Step 1		Step 2		Step 3	
Product substitution Better products within current system.		**System substitution** Redesigning systems to deliver functions/needs in better ways.		**Flourishing lives for all** Direct focus on enabling flourishing lives on a flourishing planet. Start with human needs, not with current products.	
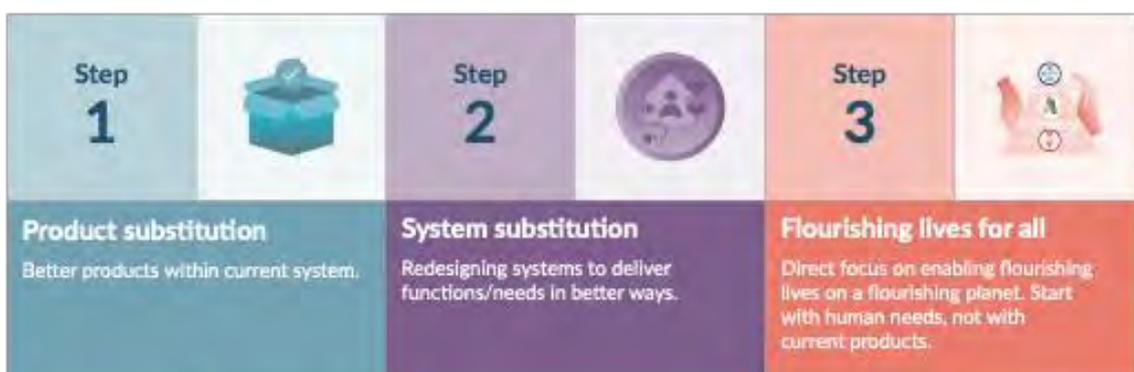
Figure 5: Three step approach from product substitution to delivery on human needs

8. Practical First Steps to Assess Flourishing Life-Years (FLY)

8.1 Scientific grounding: how FLY can be assessed using established metrics

A practical way to make Flourishing Life-Years (FLY) measurable is to treat it as an extension of the "health-adjusted life-year" family of measures: QALYs, DALYs, and HALE. These already operationalise a key idea: *time lived* weighted by *quality of that time*. DALYs quantify health loss as Years of Life Lost (YLL) + Years Lived with Disability (YLD), and are the core metric of Global Burden of Disease style assessments.

QALYs (Quality-Adjusted Life Years) are used widely in health technology assessment and economic evaluation, typically with health-state utilities derived from instruments such as EQ-5D (EuroQol). NICE guidance is a canonical example of the institutionalisation of this approach, including preferences for EQ-5D-type health-related quality of life measures.

HALE (Health-Adjusted Life Expectancy) is computed using life table methods (often Sullivan's method) and weights years lived by the severity distribution of health states. This is useful as a population reference point for what "healthy years" look like at baseline and how interventions shift them.

HDI (Human Development Index) is not a wellbeing measure, but it operationalises enabling conditions: life expectancy, education, and income. For FLY, HDI is useful because it reminds you to measure not only "how people feel" but whether they have capabilities and opportunity structures that make flourishing feasible.

Subjective wellbeing (SWB) measurement (life satisfaction, affect, eudaimonic items) is the standard way to quantify experienced quality of life and complements health-functioning metrics. OECD has detailed measurement guidance and question recommendations that can be used as a defensible starting point.

Global flourishing measurement has been pushed forward substantially by the Global Flourishing Study and related work from the Human Flourishing Program, using multidomain constructs (health, happiness, meaning, character, relationships, financial security) and longitudinal data design. This matters for FLY because it provides a credible blueprint for measuring "positive functioning" beyond absence of disease.

OECD's wellbeing framework and Better Life tools provide a multidimensional structure that is explicitly intended to support policy and benchmarking beyond GDP, and includes SWB as one of the dimensions. For organisations, it is also a helpful "domain map" to avoid cherry-picking easy outcomes.

What FLY adds is not a rejection of QALYs, DALYs, or SWB, but an integration:
- keep health utility (QALY logic),
- keep health loss / avoided burden (DALY logic),
- add flourishing domains (meaning, relationships, learning, agency),
- and treat capability conditions (education, access, security) as moderators and equity constraints.

A conservative, auditable definition is:
FLY gained over period T
= Σ over people i:
$(\Delta U\_health,i + \Delta U\_flourish,i) \times \Delta t\_i$

Where:
- $\Delta U\_health,i$ is the change in a 0 to 1 health utility (often EQ-5D style)
- $\Delta U\_flourish,i$ is an additional, bounded 0 to 1 "flourishing utility" component (usually smaller in magnitude, carefully calibrated)
- Δt_i is time exposed to the intervention (often years, or fraction of a year)

The scientific difficulty is not writing the equation. It is making ΔU estimates defensible: baseline, measurement, attribution, and uncertainty.

8.2 A structured protocol: from baseline to defensible FLY estimates

Below is a stepwise method that is closer to health economics and impact evaluation practice than a conceptual overview.

Step 1. Define the unit of analysis, population, and exposure
Specify:
1. population (who is eligible, who is included)
2. exposure definition (what counts as "treated": frequency, duration, dose)
3. time horizon (3 months, 12 months, multi-year)

Practical rule: define exposure so it is observable in data, not aspirational.

Examples:
- micro mobility: "≥3 trips/week for ≥12 weeks"
- science centre: "≥2 hour visit with participation in ≥2 assessed exhibitions"

Step 2. Define a theory of change and pre-register outcomes
Write a short causal chain and commit to outcome definitions before analysis to reduce p-hacking.

Example causal chain for micro mobility:
Trip substitution -> activity minutes -> cardio-metabolic risk + mood -> health utility + SWB -> FLY

Example causal chain for science centre:
Exhibit design -> attention quality + learning engagement -> reduced overload + increased meaning/curiosity -> SWB + flourishing domains -> FLY

Step 3. Choose instruments and build a measurement stack
Use a small, coherent battery rather than a kitchen sink.

A defensible "minimum viable FLY stack":
- Health utility: EQ-5D-5L (or a short validated health utility instrument)
- SWB: OECD-recommended life satisfaction 0 to 10, plus affect items
- Flourishing domains: short multidomain items aligned with Global Flourishing Study domains (meaning, relationships, character, etc.)
- Context / capabilities: a short set aligned with OECD wellbeing dimensions (education/skills, safety, social connection, etc.)

For mental overload / "mental pollution" contexts, do not invent a new psychometric scale lightly. If you use a bespoke "Flow / Mental Pollution Assessment," anchor it in:
- Flow theory (deep engagement) and validated attention/overload literature
- Digital wellbeing / problematic use constructs if relevant

Step 4. Establish baseline and counterfactual
This is where most impact reporting quietly collapses.

You need a baseline and a credible estimate of what would have happened without the intervention. Options, from strongest to weakest:

A) Randomised controlled trial (RCT): randomise incentives or exhibit variants
B) Quasi-experimental:
- difference-in-differences with matched controls
- regression discontinuity (eligibility thresholds)
- instrumental variables (rarely feasible, but powerful)
  C) Pre-post without control: weakest, but still useful for early piloting

Minimum acceptable for credible claims at scale:
- pre-post plus a matched comparison group (propensity score matching or similar)
- or staggered rollout allowing difference-in-differences

Step 5. Data collection plan
Define:
- sampling frame (who gets surveyed, when)
- response rate targets and non-response bias checks
- linkage plan (survey to behavioural logs) with privacy safeguards

Typical cadence:
- Baseline survey (T0)
- Follow-up (T1 at 3 months, T2 at 12 months)
- Passive data (trips, visit participation) continuously

Step 6. Convert measured changes into utility changes (ΔU)
You need a mapping from survey scales to a utility metric.

Health utility:
- EQ-5D responses map to an index value using a value set (country specific where possible)

SWB / flourishing:
Two conservative approaches:

Approach 6A: "Parallel utilities"
(recommended for early-stage)
- keep health utility as the primary 0 to 1 utility
- report SWB and flourishing as separate outcome domains
- convert to "FLY-equivalents" only for a bounded subset (for example, mental wellbeing, meaning) with explicit calibration assumptions

Approach 6B: "Composite utility" (advanced, higher burden of proof)
- construct a composite flourishing utility with weights derived from:
  - stated preference experiments
  - longitudinal associations with life outcomes
  - or alignment to established multidomain flourishing frameworks and validation studies

For most organisations, 6A is scientifically safer until you have validation evidence.

Step 7. Compute individual-level FLY and aggregate
For person i over a year:
$FLY_i = (U_{i,post} - U_{i,baseline}) \times 1\ year$

If exposure is not full-year:
$FLY_i = (\Delta U_i) \times (months\_exposed / 12)$

Aggregate:
Total FLY = Σ FLY_i across all people

Then stratify:
- by baseline status (low vs high wellbeing, chronic conditions)
- by equity groups (age, income proxies, neighbourhood)
- by exposure dose (low, medium, high trips/visits)

Step 8. Uncertainty, sensitivity, and error bars
Do not publish a single-point number without a range. Include:
- sampling uncertainty (confidence intervals)
- model uncertainty (different mapping assumptions)
- attribution uncertainty (share attributable to your intervention)

A clean practice is to report:
- "central estimate"
- "conservative" (lower bound, stricter attribution)
- "optimistic but plausible" (upper bound)

Step 9. Governance and ethics
- informed consent for survey linkage
- minimisation of data collection
- differential privacy where appropriate
- pre-specified limits on behavioural nudging (especially for children)

Appendix 1: Neuroscience guidance for Flourishing lives[175]

Flourishing lives: Happiness/Pleasure Balance
Using neuroscience to guide a new generation of companies that want to make the world a better place

Pleasure/ Attention – Dopamine

Brain response

Happiness/Mood – Serotonin

Consuming for myself

More/addiction

Taking

Individual

Visceral/Body

Short-term

Contributing to society

Sufficiency

Giving

Collective

Ethereal/Mind

Long-term

1. Use of product/service
2. Need supported
3. Role supported
4. Social context
5. Feeling encouraged

Encouragement
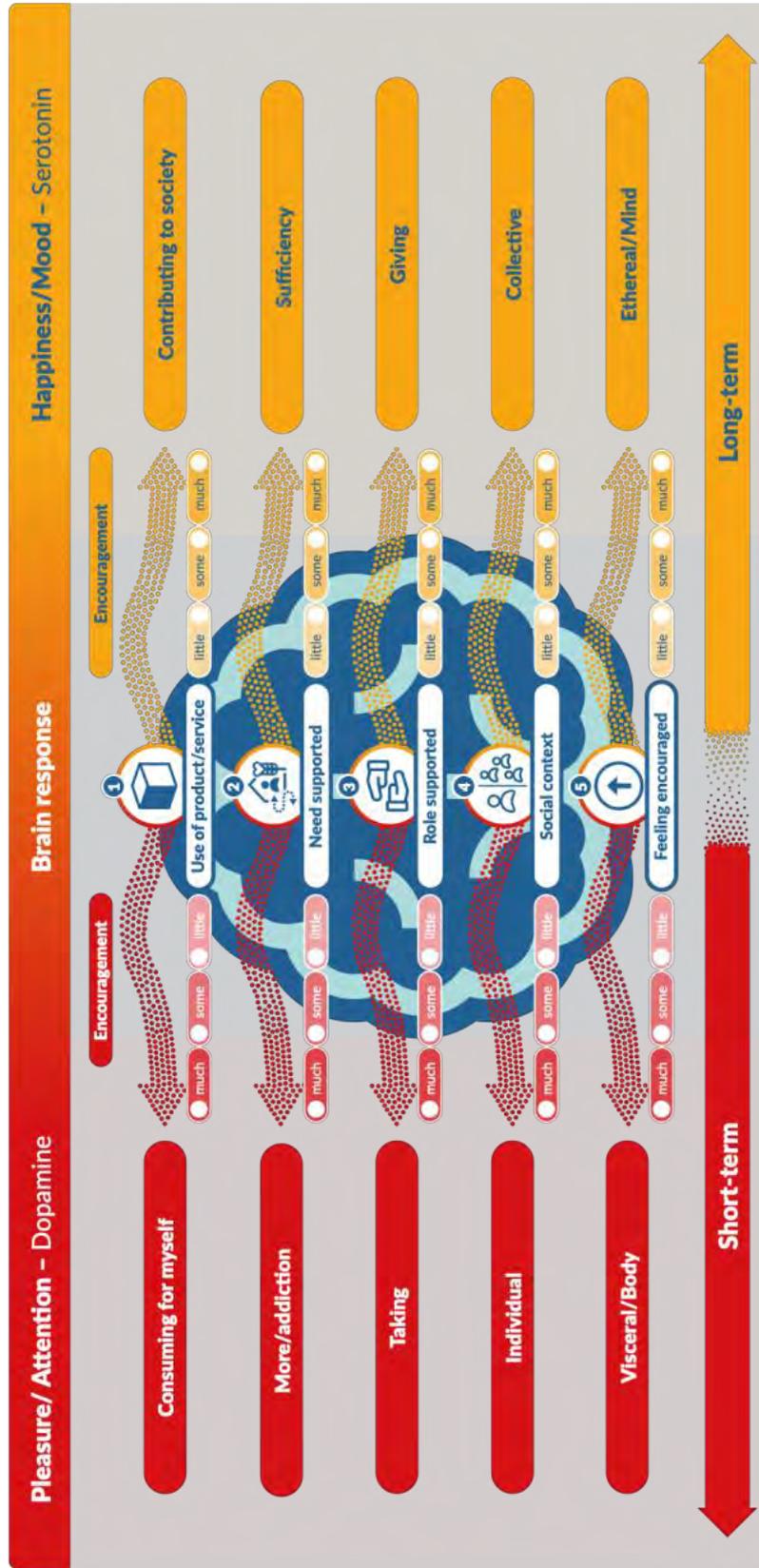
Appendix 2: Illustrative cases

Micromobility provider

This example uses an incentive program aligned with user-provided New Year resolutions (health, learning, nature exploration). The numbers below are illustrative calculation mechanics.

Step A1. Define cohorts and exposure

Population: 1,000,000 registered users
Active eligible cohort: 60% used service in last 30 days -> 600,000
Treated cohort definition: opted into "Resolution Program" and completed ≥12 weeks:

- uptake: 50% of active -> 300,000 treated

Comparison group: matched active users not in program (300,000)

Step A2. Baseline measurement (T0)

Survey a stratified sample (for power and representativeness):

- 20,000 treated + 20,000 control Measures:
- EQ-5D-5L index
- OECD life satisfaction 0 to 10
- brief, domain-specific questions covering key aspects of flourishing (meaning, relationships, learning engagement)

Also collect baseline behavioural covariates:

- trips/week, trip length
- self-reported activity minutes
- optional wearable linkage for subsample (if available)

Step A3. Intervention components

1. Health: incentives for active minutes via multimodal journeys
2. Learning: incentives for library checkouts / learning-app sessions
3. Nature: incentives for rides to parks/trails plus group events

Step A4. Estimate causal effects (difference-in-differences)

Compute ΔU_health as:

(Mean EQ-5D change treated) - (Mean EQ-5D change control)

Assumed results at 12 months:

- Treated EQ-5D change: +0.010
- Control EQ-5D change: +0.002
  Difference-in-differences: +0.008 utility

This is in the range of "small but potentially meaningful" quality-of-life shifts for population interventions, but the point is method, not the specific value.

Now apply dose adjustment:

- High exposure subgroup (top 30% of treated by trips): effect +0.012
- Medium (middle 40%): +0.007
- Low (bottom 30%): +0.003

Weighted mean:
0.30 * 012 + 0.40 *0.007 + 0.30*0.003
= 0.0036 + 0.0028 + 0.0009
= 0.0073

So ΔU_health ≈ 0.0073 per treated user-year

Step A5. Convert Subjective Well-Being (SWB) and learning/nature outcomes

Conservative approach: report these separately, and only convert the portion that is plausibly "health-related mental wellbeing" into utility.

Suppose life satisfaction increases:

- treated: +0.25 on 0 to 10
- control: +0.10
  difference: +0.15

You do not automatically translate 0.15 life satisfaction points into utility. Instead:

- treat it as evidence supporting the mechanism
- optionally map a small fraction into a mental wellbeing utility increment (pre-registered), for example:
  - ΔU_flourish = 0.001 to 0.003

Assume conservative ΔU_flourish = 0.0015 for treated users

Total utility change used for FLY:
ΔU_total = 0.0073 + 0.0015 = 0.0088

Step A6. Compute total FLY
Treated users: 300 000
Exposure time: assume 9 months average adherence (0.75 years)

Total FLY = N × ΔU_total × exposure_years
= 300 000 × 0.0088 × 0.75
First multiply 0.0088 × 0.75 = 0.0066
Then 300 000 × 0.0066 = 1 980 FLY

So ~1,980 FLY per year attributable to the program under conservative conversion.

Step A7. Sensitivity bounds
- Lower bound: ΔU_total = 0.006, exposure 0.6 years
  Total = 300 000 × 0.006 × 0.6 = 1 080 FLY
- Upper plausible: ΔU_total = 0.012, exposure 0.85 years
  Total = 300 000 × 0.012 × 0.85 = 3 060 FLY

Report as: 1 100 to 3 100 FLY/year, central 2 000, with full documentation of mapping and attribution.

Key scientific issues to document:
- selection bias in opt-in
- substitution effects (does it replace walking, or replace car trips)
- rebound (extra rides instead of other activity)
- seasonality (New Year resolution effects decay)
- equity effects (benefits concentrated in already-advantaged groups)

STEM centre

From a dynamic solution perspective, where stakeholders are assessed as solution providers delivering on human needs the STEM centre is not treated primarily as a short, stand-alone wellbeing exposure event. It is conceptualised as a "trigger" or "trampoline" that shifts trajectories of lives in society.

The theory of change is based on a three-step approach that is iterative.

Step one: Direct, in-venue effects on visitors
Insights and inspiration at the STEM centre through exhibitions, meeting of likeminded, connecting to role models, etc.

Step two: Visitor-initiated initiatives
Initiatives that allow platforms for interested individuals and groups to launch initiatives where the insights and inspiration can be turned into action through initiatives such as ambassador programs, reversed mentorship initiatives, etc.

Step three: Downstream implemented projects
The actual projects implemented under the visitor-initiated initiatives. Here projects are allowed to scale that themselves generate substantial Flourishing Life-Years (FLY) in wider populations.

The impacts therefore exist on three levels:
1. Immediate visitor-level effects: Short duration and medium population reach
2. Visitor-initiated projects Medium duration but smaller population reach
3. Downstream implemented projects Long duration and very large population reach

Step B1. Define exposure and developmental pathway
Annual visitors: 1,000,000 (as illustrative example)

"Assessed visit" definition: entry plus participation in at least two tracked exhibit modules and exposure to communication explicitly linked to flourishing lives and ambassador pathways.

Assume 60 percent meet this:
600,000 assessed visitors

Within this group, the theory of change identifies a funnel:

• Broad inspiration and mindset shift (many)
• Ambassador or project initiator role (few)
• Implementation of real-world projects (very few, but high leverage)

This requires longitudinal tracking beyond the visit.

Step B2. Measurement architecture
Level 1: Immediate visitor outcomes
Measured through:
• Exit survey (2 to 3 minutes)
• Follow-up at 2 to 4 weeks

Instruments:
• Subjective Well-Being (SWB) (affect, life satisfaction)
• Flourishing items (meaning, curiosity, sense of agency)
• Perceived cognitive overload vs focused engagement (anchored in attention and overload research)
• Intention measures: "I feel motivated to start or join a project that improves lives or the planet"

Level 2: Ambassador and project initiation tracking
Visitors are invited to:
• Join an "FLY Ambassador" or project incubator programme
• Register ideas, join teams, or report projects they start

Data collected:
• Number and type of initiatives started
• Thematic domain (health, learning, environment, social connection, etc.)
• Target population size
• Duration and intensity

Level 3: Downstream project implementation
For a subset of projects:
• Follow-up surveys and reporting at 6 to 24 months
• Estimation of people reached and type of outcomes
• Mapping to FLY domains

Step B3. Immediate (in-centre) FLY effects
From A/B or staggered rollout evaluation of exhibit and communication design:

Assume estimated per-visitor utility change:
$\Delta U\_total = 0.05$
(Of the time spend 5% on average contribute to increased mental wellbeing + flourishing components combined, conservatively)

Duration assumption:
Average duration of effect = 2 hours
(0.0000228 years)
Visitors affected annually: 600 000

Step 1 FLY:
$FLY\_step1 = N \times \Delta U \times duration$
600 000 × 0.05 × 0.0000228
= 684 FLY

This is the direct experiential layer.

Step B4. Ambassador and self-initiated projects
Assume:
• 10 percent of assessed visitors (60,000 people) report concrete post-visit action beyond personal lifestyle change
• 2 percent (12,000) engage at a higher level (organising activities, joining structured programmes) resulting in a multiplication factor of 10 that are engaged in the development and implementation of activities reaching 120 000 people in total

Total number engaged in visitor-initiated projects: 60 000 + 120 000 = 180 000

• Assume average ΔU_total for participants in these projects = 0.3
(Of the time spend 30% on average contribute to increased mental wellbeing + flourishing components combined, conservatively)

Duration assumption:
Average duration of effect = 100 hours (0.011 year)

Step 2 FLY:
$FLY\_step2 = N \times \Delta U \times duration$
180 000 * 0.6 * 0.011 = 1 188 FLY

Step B5 Impact from implemented projects (systems leverage)
Some of these projects scale, are adopted by institutions, or influence policies and organisational practices.

Assume:
• 10 percent of initiator projects (300 projects) reach institutional or city-level implementation
• Each such project affects on average 5,000 people
• More modest per-person effect: $\Delta U\_total = 0.005$
• Duration = 2 years (average sustained exposure)

FLY per scaled project:
5,000 × 0.005 × 2 = 50 FLY

Total FLY from scaled implementation layer:
300 × 50 = 15 000 FLY

Step B6. Total FLY estimate

Layer	Estimated FLY/year
Direct visitor experience	680
Visitor-initiated projects	1180
Scaled downstream projects	15,000
TOTAL	**16 800 FLY per year**
People affected	**2.5 million with better lives**

With the strategy and theory of change, the centre's primary role is catalytic, not direct. The direct experiential effect is roughly 4 percent of total impact, while the vast majority comes from actions and systems influenced downstream.

This aligns with the "trampoline" model: short exposure, long trajectory shift.

Step B7. Sensitivity and leverage interpretation

If:
• 0.2 percent become initiators (instead of 0.5 percent), and
• Only 5 percent of projects scale (instead of 10 percent),
Total FLY might fall to 5 000 per year.

If:
• 1 percent become initiators and
• 15 percent of projects scale,

Total FLY can exceed 30 000 per year.

This 10×–100× amplification relative to direct effects is typical of educational and inspirational institutions when evaluated through a trajectory-change lens rather than a momentary-experience lens.

Step B8. Key scientific challenges
Attribution becomes more complex at each layer.

Critical issues to address:
• Longitudinal tracking and attrition bias
• Self-report inflation of project impact
• Double counting when projects overlap with other interventions
• Counterfactual: would these individuals have acted anyway?
• Time lag between inspiration and measurable outcomes

Methods to strengthen credibility:
• Comparison with similar visitors not exposed to ambassador framing
• Independent verification samples of reported projects
• Conservative attribution fractions (for example, only 30 percent of downstream impact attributed to the centre)
• Scenario reporting (low, central, high)

Under this model, the STEM centre functions less like a short-term experience venue and more like a capability and agency accelerator. Its FLY contribution is dominated by how effectively it converts inspiration into structured pathways for action, support, and scaling.

The evaluation focus therefore shifts from only "How did visitors feel after the visit?" to "How many trajectories changed, and what did those new trajectories produce in the world?"

Appendix 3. Economic valuation of Flourishing Life-Years (FLYs)

Economic valuation of Flourishing Life-Years is intended as a translation mechanism, not a moral reduction of human experience.

To translate Flourishing Life-Years (FLYs) into economic terms in order to make it visible in existing economic assessments, this paper applies a conservative valuation of €40 000 per FLY. This value is intentionally cautious. The valuation understates rather than overstates the societal value of flourishing. It excludes long-term healthcare savings, intergenerational benefits, distributional gains, and many non-market values such as dignity, autonomy, and social trust. As such, it should be interpreted as a floor rather than a ceiling.

Importantly, the purpose of this valuation is not to claim precise monetisation of wellbeing, but to provide an order-of-magnitude benchmark that allows comparison with conventional cost–benefit analyses and other metrics.

1. Value of a statistical life-year (VSLY)[176]
European transport and environmental agencies routinely value avoided mortality in terms of *life-years*. When converting the Value of a Statistical Life (VSL) into annualized terms, typical VSL estimates fall in the range of €30,000–€100,000 per life-year, depending on country, income assumptions, and discounting practices.
- The European Commission (DG MOVE) and national transport agencies regularly use VSLY values in the €40 000–€70 000 range for transport safety and air-pollution appraisal.
- The OECD has repeatedly noted that European VSLY values cluster well above €40 000 when adjusted for income growth and purchasing power.

Using €40 000 per FLY sits at the conservative lower bound of standard European practice for any life.

2. Consistency with health-economics thresholds (QALY/DALY)[177]
In health economics, quality-adjusted life-years (QALYs) and disability-adjusted life-years (DALYs) are widely used to value health interventions.
- Many European health systems implicitly accept €30 000–€50 000 per QALY as cost-effective.
- The WHO and European public-health literature frequently apply thresholds around 1–3× GDP per capita per healthy life-year, which for most EU countries translates to €35 000–€120 000 per year.

A FLY is conceptually broader than a QALY, capturing mental wellbeing, agency, social connection, and meaning, not only health. Applying €40 000 per FLY therefore understates rather than overstates value relative to these benchmarks.[178]

3. Revealed preferences in wellbeing and happiness economics[179]
A growing body of empirical research links subjective wellbeing (life satisfaction) to income, environmental quality, food habits, access to green spaces, health, and urban structures.
- Large cross-country studies consistently find that a one-point increase in life satisfaction (on a 0–10 scale) corresponds to annual income equivalents well above €30 000–€50 000.
- Improvements in air quality, active mobility, access to green space, and reduced noise, central mechanisms behind FLYs, have been monetised in the literature at thousands of euros per person per year, even when changes are modest.

Aggregated across populations and over time, these values comfortably support a €40 000 per life-year benchmark as an absolute minimum.

4. €40 000 is deliberately conservative

The chosen value excludes or downplays several effects that are known to have substantial economic value:

- Long-term reductions in chronic disease prevalence and healthcare expenditure
- Intergenerational benefits (children's cognitive development, lifelong health trajectories)
- Distributional benefits for low-income and vulnerable groups
- Non-market values such as dignity, autonomy, cultural identity, and social trust

Moreover, the valuation does not double-count productivity or assume full employment effects; it treats wellbeing value as a societal benefit, not GDP.

As a result, €40 000 per FLY should be used carefully and the number should be interpreted as a floor, not a ceiling, in most cases.

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