

# Sustainability Leadership





# Sustainability Leadership

Class 8:  
Part 1: Governance for Sustainability  
Part 2: Options





- Unsustainability of our modern civilization is mainly a result of the mainstream economic model.
- Can be traced back to Adam Smith's work published in the late 18th century.
- Based on his work, the purpose of economy is the creation of human wealth, while no value is being attached to the preservation of a healthy planetary life-support system.
- Economic thinking focusing on the creation of more human wealth impacts most decisions made at all levels of governance.
- Conservation very often has to fit into this economic thinking.

## Questions:

- Can sustainability emerge out of a society that disregards non-human wealth, discounts the future and makes decisions mainly based on economic considerations?
- Are the current governance structures capable of making progress towards sustainability?
- What other governance is needed to have sustainability as an emergent property?

## Questions:

- Can sustainability emerge out of a society that disregards non-human wealth, discounts the future and makes decisions mainly based on economic considerations?
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- What other governance is needed to have sustainability as an emergent property?

## More Questions:

- Why are current governance structures to a large extent decoupled from the risk perception of a large fraction of scientists, non-governmental organizations, and leading thinkers that indicates that our civilization is facing major existential threats?
- What governance structures would be needed to address these global threats?



## Science has issued warnings:

### WORLD SCIENTISTS' WARNING TO HUMANITY

**INTRODUCTION** Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.

**THE ENVIRONMENT** The environment is suffering critical stress:

**The Atmosphere** Stratospheric ozone depletion threatens us with enhanced ultraviolet radiation at the earth's surface, which can be damaging or lethal to many life forms. Air pollution near ground level, and acid precipitation, are already causing widespread injury to humans, forests, and crops.

**Water Resources** Heedless exploitation of depletable groundwater supplies endangers food production and other essential human systems. Heavy demands on the world's surface waters have resulted in serious shortages in some 80 countries, containing 40 percent of the world's population. Pollution of rivers, lakes, and groundwater further limits the supply.

**Oceans** Destructive pressure on the oceans is severe, particularly in the coastal regions which produce most of the world's food fish. The total marine catch is now at or above the estimated maximum sustainable yield. Some fisheries have already shown signs of collapse. Rivers carrying heavy burdens of eroded soil into the seas also carry industrial, municipal, agricultural, and livestock waste—some of it toxic.

**Soil** Loss of soil productivity, which is causing extensive land abandonment, is a widespread by-product of current practices in agriculture and animal husbandry. Since 1945, 11 percent of the earth's vegetated surface has been degraded—an area larger than India and China combined—and per capita food production in many parts of the world is decreasing.

**Forests** Tropical rain forests, as well as tropical and temperate dry



person in five lives in absolute poverty without enough to eat, and one in ten suffers serious malnutrition.

No more than one or a few decades remain before the chance to avert the threats we now confront will be lost and the prospects for humanity immeasurably diminished.

**WARNING** We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.

**WHAT WE MUST DO** Five inextricably linked areas must be addressed simultaneously:

- 1. We must bring environmentally damaging activities under control to restore and protect the integrity of the earth's systems we depend on.** We must, for example, move away from fossil fuels to more benign, inexhaustible energy sources to cut greenhouse-gas emissions and the pollution of our air and water. Priority must be given to the development of energy sources matched to Third World needs—small-scale and relatively easy to implement.
- 2. We must manage resources crucial to human welfare more effectively.** We must give high priority to efficient use of energy, water, and other materials, including expansion of conservation and recycling.
- 3. We must stabilize population. This will be possible only if all nations recognize that it requires improved social and economic conditions, and the adoption of effective, voluntary family planning.**
- 4. We must reduce and eventually eliminate poverty.**
- 5. We must ensure sexual equality, and guarantee women control over their own reproductive decisions.**

**Forests** Tropical rain forests, as well as tropical and temperate dry forests, are being destroyed rapidly. At present rates, some critical forest types will be gone in a few years, and most of the tropical rain forest will be gone before the end of the next century. With them will go large numbers of plant and animal species.

**Living Species** The irreversible loss of species, which by 2100 may reach one-third of all species now living, is especially serious. We are losing the potential they hold for providing medicinal and other benefits, and the contribution that genetic diversity of life forms gives to the robustness of the world's biological systems and to the astonishing beauty of the earth itself.

Much of this damage is irreversible on a scale of centuries, or permanent. Other processes appear to pose additional threats. Increasing levels of gases in the atmosphere from human activities, including carbon dioxide released from fossil fuel burning and from deforestation, may alter climate on a global scale. Predictions of global warming are still uncertain—with projected effects ranging from tolerable to very severe—but the potential risks are very great.

Our massive tampering with the world's interdependent web of life—coupled with the environmental damage inflicted by deforestation, species loss, and climate change—could trigger widespread adverse effects, including unpredictable collapses of critical biological systems whose interactions and dynamics we only imperfectly understand.

Uncertainty over the extent of these effects cannot excuse complacency or delay in facing the threats.

**POPULATION** The earth is finite. Its ability to absorb wastes and destructive effluent is finite. Its ability to provide food and energy is finite. Its ability to provide for growing numbers of people is finite. And we are fast approaching many of the earth's limits. Current economic practices which damage the environment, in both developed and underdeveloped nations, cannot be continued without the risk that vital global systems will be damaged beyond repair.

Pressures resulting from unrestrained population growth put demands on the natural world that can overwhelm any efforts to achieve a sustainable future. If we are to halt the destruction of our environment, we must accept limits to that growth. A World Bank estimate indicates that world population will not stabilize at less than 12.4 billion, while the United Nations concludes that the eventual total could reach 14 billion, a near tripling of today's 5.4 billion. But, even at this moment, one

over their own reproductive decisions.

The developed nations are the largest polluters in the world today. They must greatly reduce their overconsumption, if we are to reduce pressures on resources and the global environment. The developed nations have the obligation to provide aid and support to developing nations, because only the developed nations have the financial resources and the technical skills for these tasks.

Acting on this recognition is not altruism, but enlightened self-interest: whether industrialized or not, we all have but one lifeboat. No nation can escape from injury when global biological systems are damaged. No nation can escape from conflicts over increasingly scarce resources. In addition, environmental and economic instabilities will cause mass migrations with incalculable consequences for developed and undeveloped nations alike.

Developing nations must realize that environmental damage is one of the gravest threats they face, and that attempts to blunt it will be overwhelmed if their populations go unchecked. The greatest peril is to become trapped in spirals of environmental decline, poverty, and unrest, leading to social, economic, and environmental collapse.

Success in this global endeavor will require a great reduction in violence and war. Resources now devoted to the preparation and conduct of war—amounting to over \$1 trillion annually—will be badly needed in the new tasks and should be diverted to the new challenges.

A new ethic is required—a new attitude towards discharging our responsibility for caring for ourselves and for the earth. We must recognize the earth's limited capacity to provide for us. We must recognize its fragility. We must no longer allow it to be ravaged. This ethic must motivate a great movement, convincing reluctant leaders and reluctant governments and reluctant peoples themselves to effect the needed changes.

The scientists issuing this warning hope that our message will reach and affect people everywhere. We need the help of many.

We require the help of the world community of scientists—natural, social, economic, political;

We require the help of the world's business and industrial leaders;

We require the help of the world's religious leaders; and

We require the help of the world's peoples.

We call on all to join us in this task.

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Science has indicated what needs to be done:



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We must halt deforestation, injury to and loss of agricultural land, and the loss of terrestrial and marine plant and animal species.

**2. We must manage resources crucial to human welfare more effectively.** We must give high priority to efficient use of energy, water, and other materials, including expansion of conservation and recycling.

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... but the leaders are not listening:

## Viewpoint

### World Scientists' Warning to Humanity: A Second Notice

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST, MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries

**T**wenty-five years ago, the Union of Concerned Scientists and more than 1700 independent scientists, including the majority of living Nobel laureates in the sciences, penned the 1992 "World Scientists' Warning to Humanity" (see supplemental file S1). These concerned professionals called on humankind to curtail environmental destruction and cautioned that "a great change in our stewardship of the Earth and the life on it is required, if vast human misery is to be avoided." In their manifesto, they showed that humans were on a collision course with the natural world. They expressed concern about current, impending, or potential damage on planet Earth involving ozone depletion, freshwater availability, marine life depletion, ocean dead zones, forest loss, biodiversity destruction, climate change, and continued human population growth. They proclaimed that fundamental changes were urgently needed to avoid the consequences our present course would bring.

deforestation, and reverse the trend of collapsing biodiversity.

On the twenty-fifth anniversary of their call, we look back at their warning and evaluate the human response by exploring available time-series data. Since 1992, with the exception of stabilizing the stratospheric ozone layer, humanity has failed to make sufficient progress in generally solving these foreseen environmental challenges, and alarmingly, most of them are getting far worse (figure 1, file S1). Especially troubling is the current trajectory of potentially catastrophic climate change due to rising GHGs from burning fossil fuels (Hansen et al. 2013), deforestation (Keenan et al. 2015), and agricultural production—particularly from farming ruminants for meat consumption (Ripple et al. 2014). Moreover, we have unleashed a mass extinction event, the sixth in roughly 540 million years, wherein many current life forms could be annihilated or at least committed to extinction by the end of this century.

the urgent steps needed to safeguard our imperilled biosphere.

As most political leaders respond to pressure, scientists, media influencers, and lay citizens must insist that their governments take immediate action as a moral imperative to current and future generations of human and other life. With a groundswell of organized grassroots efforts, dogged opposition can be overcome and political leaders compelled to do the right thing. It is also time to re-examine and change our individual behaviors, including limiting our own reproduction (ideally to replacement level at most) and drastically diminishing our *per capita* consumption of fossil fuels, meat, and other resources.

The rapid global decline in ozone-depleting substances shows that we can make positive change when we act decisively. We have also made advancements in reducing extreme poverty and hunger ([www.worldbank.org](http://www.worldbank.org)). Other notable progress (which does not yet show up in the global

in the renewable-energy sector. We have learned much since 1992, but the advancement of urgently needed changes in environmental policy, human behavior, and global inequities is still far from sufficient.

Sustainability transitions come about in diverse ways, and all require civil-society pressure and evidence-based advocacy, political leadership, and a solid understanding of policy instruments, markets, and other drivers. Examples of diverse and effective steps humanity can take to transition to sustainability include the following (not in order of importance or urgency): (a) prioritizing the enactment of connected well-funded and well-managed reserves for a significant proportion of the world's terrestrial, marine, freshwater, and aerial habitats; (b) maintaining nature's ecosystem services by halting the conversion of forests, grasslands, and other native habitats; (c) restoring native plant communities at large scales, particularly forest landscapes; (d) rewilding regions with native species, especially apex predators, to restore ecological processes and dynamics; (e) devel-

processes and dynamics; (e) developing and adopting adequate policy instruments to remedy defaunation, the poaching crisis, and the exploitation and trade of threatened species; (f) reducing food waste through education and better infrastructure; (g) promoting dietary shifts towards mostly plant-based foods; (h) further reducing fertility rates by ensuring that women and men have access to education and voluntary family-planning services, especially where such resources are still lacking; (i) increasing outdoor nature education for children, as well as the overall engagement of society in the appreciation of nature; (j) divesting of monetary investments and purchases to encourage positive environmental change; (k) devising and promoting new green technologies and massively adopting renewable energy sources while phasing out subsidies to energy production through fossil fuels; (l) revising our economy to reduce wealth inequality and ensure that prices, taxation, and incentive systems take into account the real costs which consumption patterns impose on our environment; and (m) estimating a scientifically defensible, sustainable human population size for the long term while rallying nations and leaders to support that vital goal.



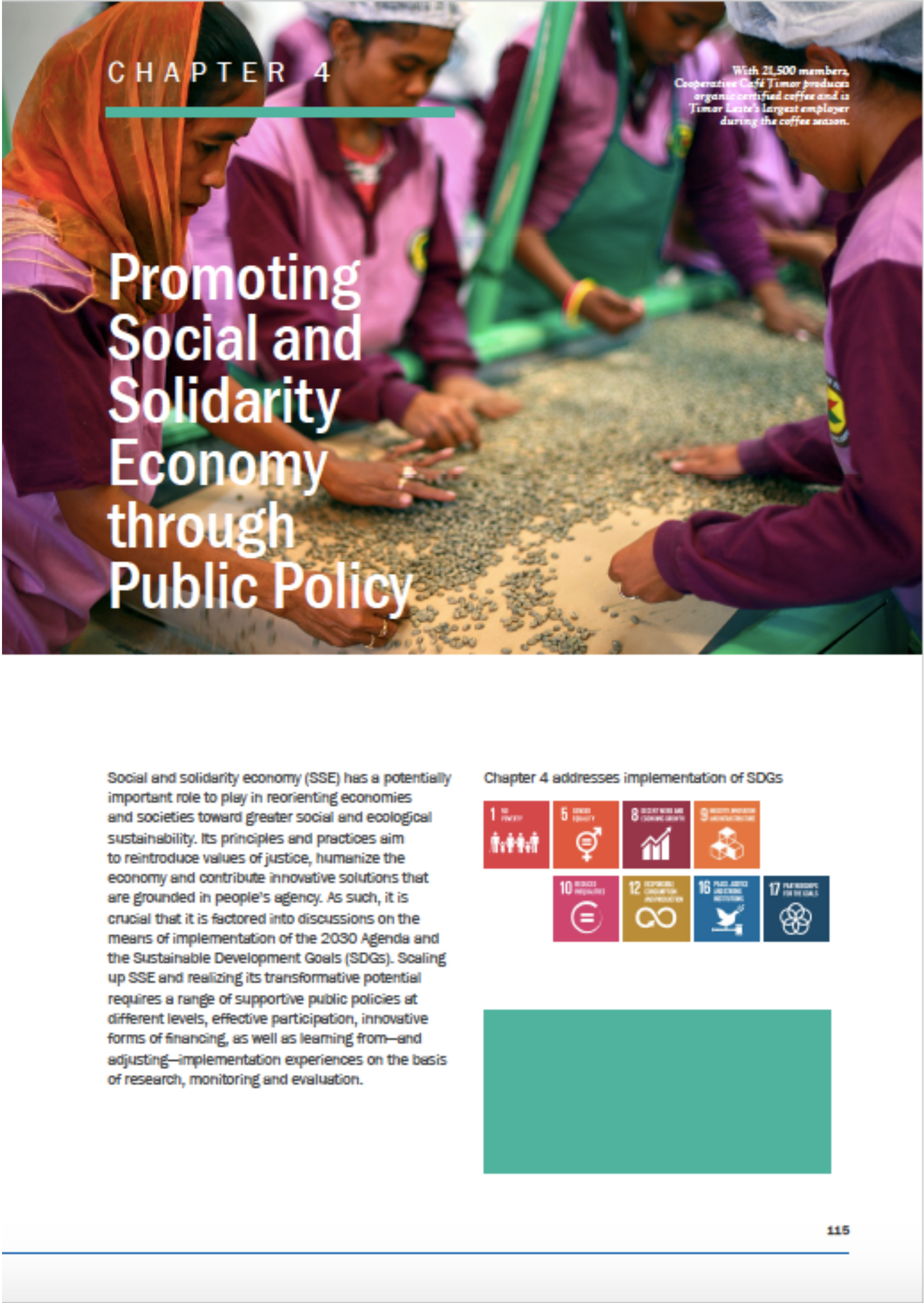
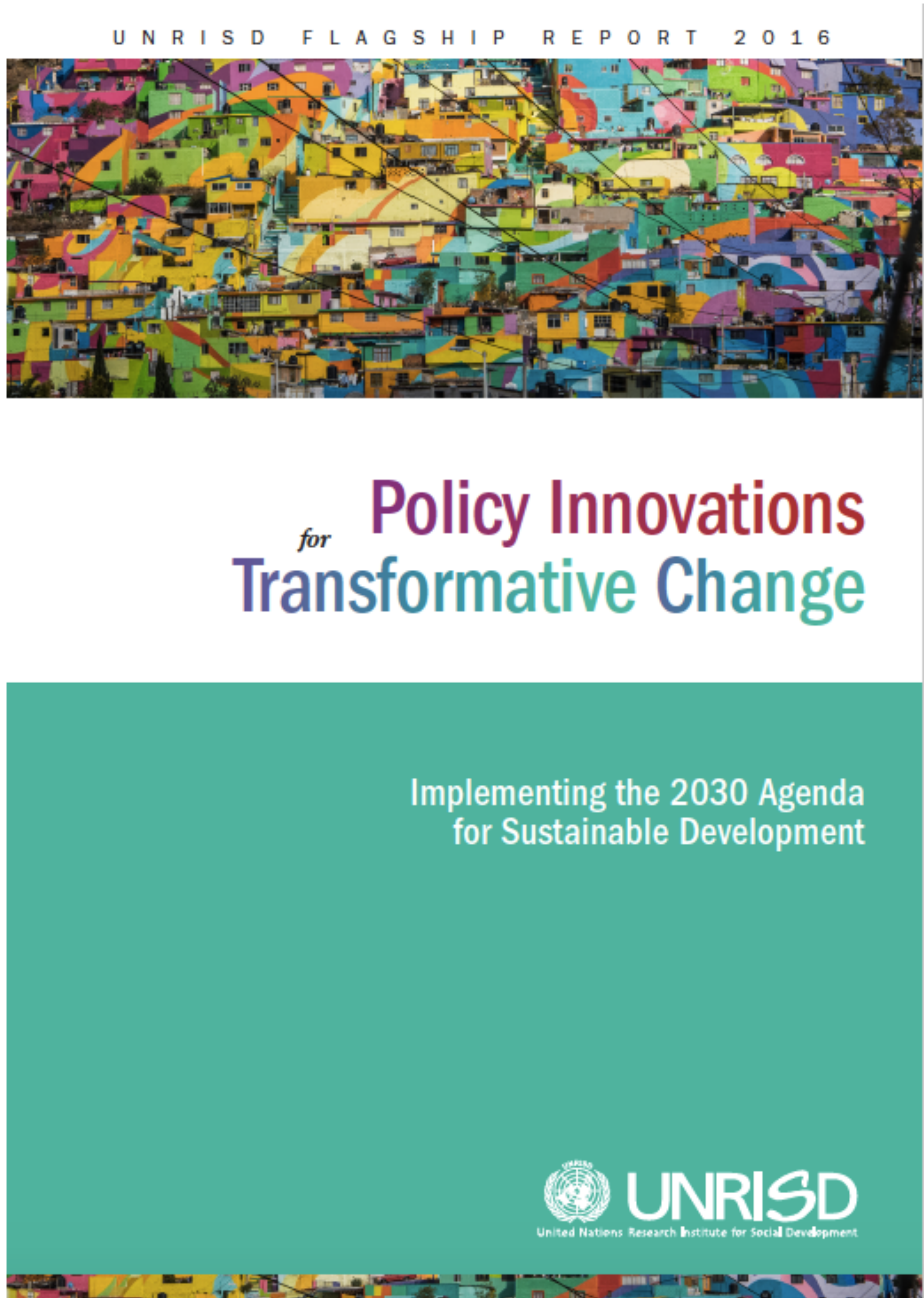
## United Nations' 2030 Agenda for Sustainable Development:



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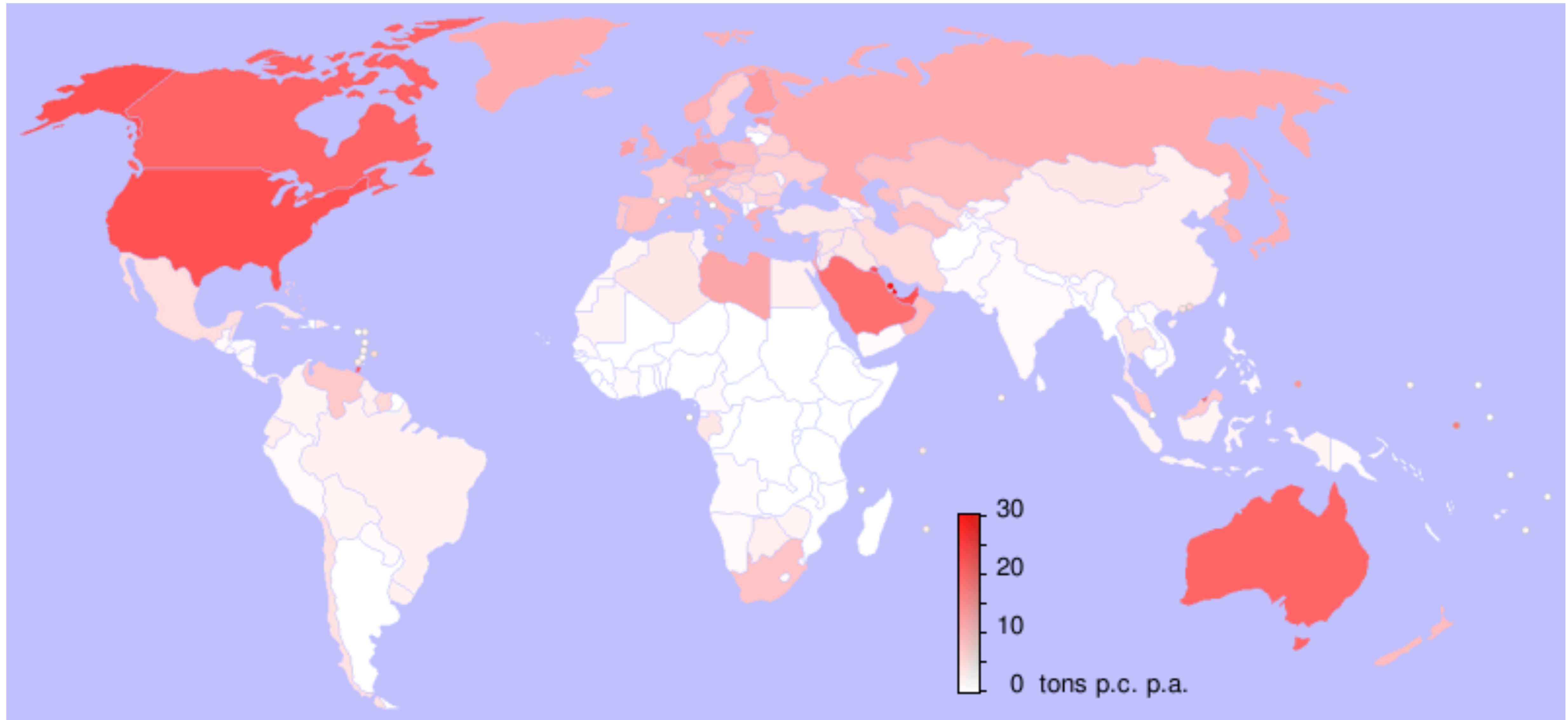
Social and solidarity economy (SSE) has a potentially important role to play in reorienting economies and societies toward greater social and ecological sustainability. Its principles and practices aim to reintroduce values of justice, humanize the economy and contribute innovative solutions that are grounded in people's agency. As such, it is crucial that it is factored into discussions on the means of implementation of the 2030 Agenda and the Sustainable Development Goals (SDGs). Scaling up SSE and realizing its transformative potential requires a range of supportive public policies at different levels, effective participation, innovative forms of financing, as well as learning from—and adjusting—implementation experiences on the basis of research, monitoring and evaluation.

Chapter 4 addresses implementation of SDGs





Carbon emission per person per year:





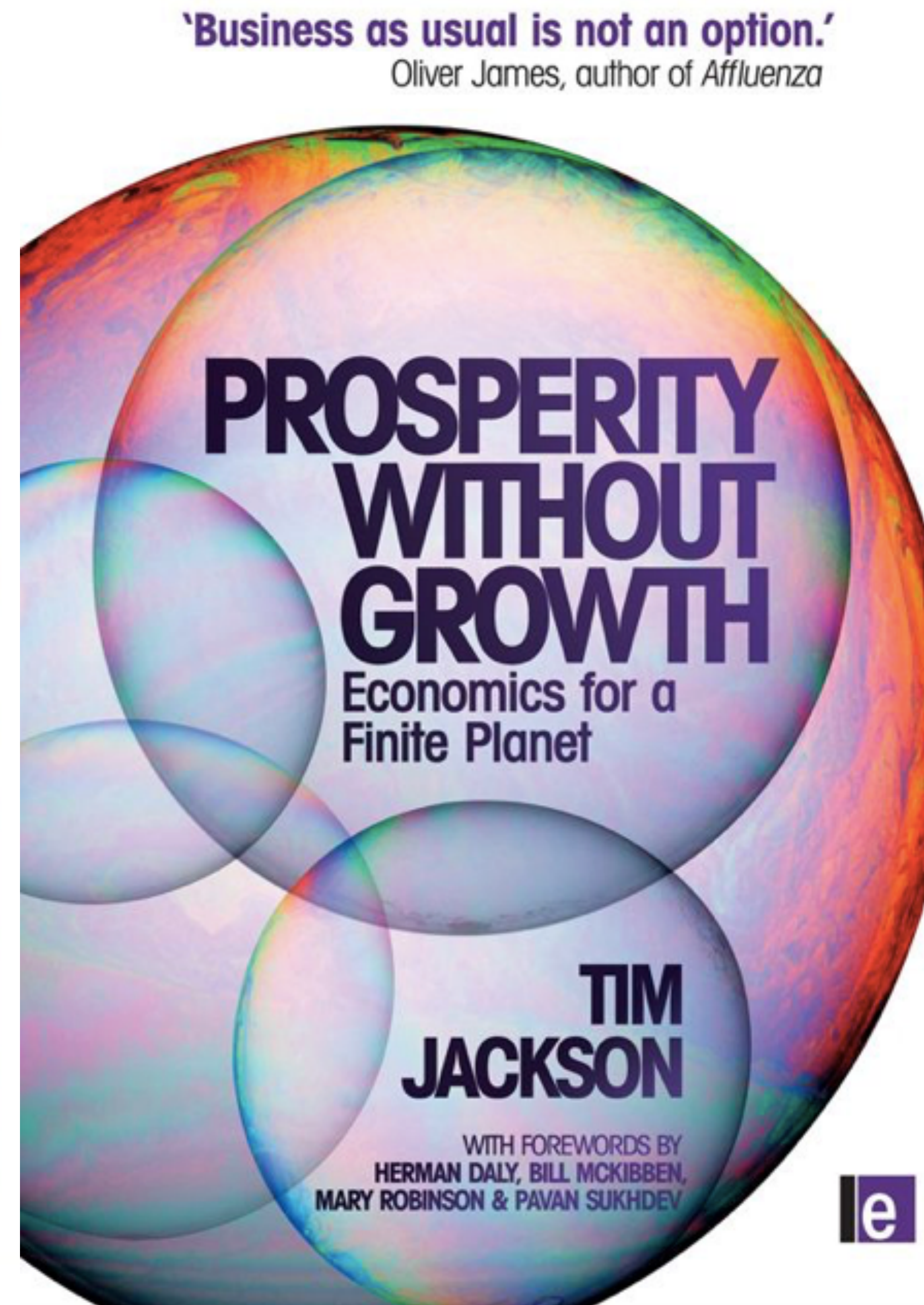




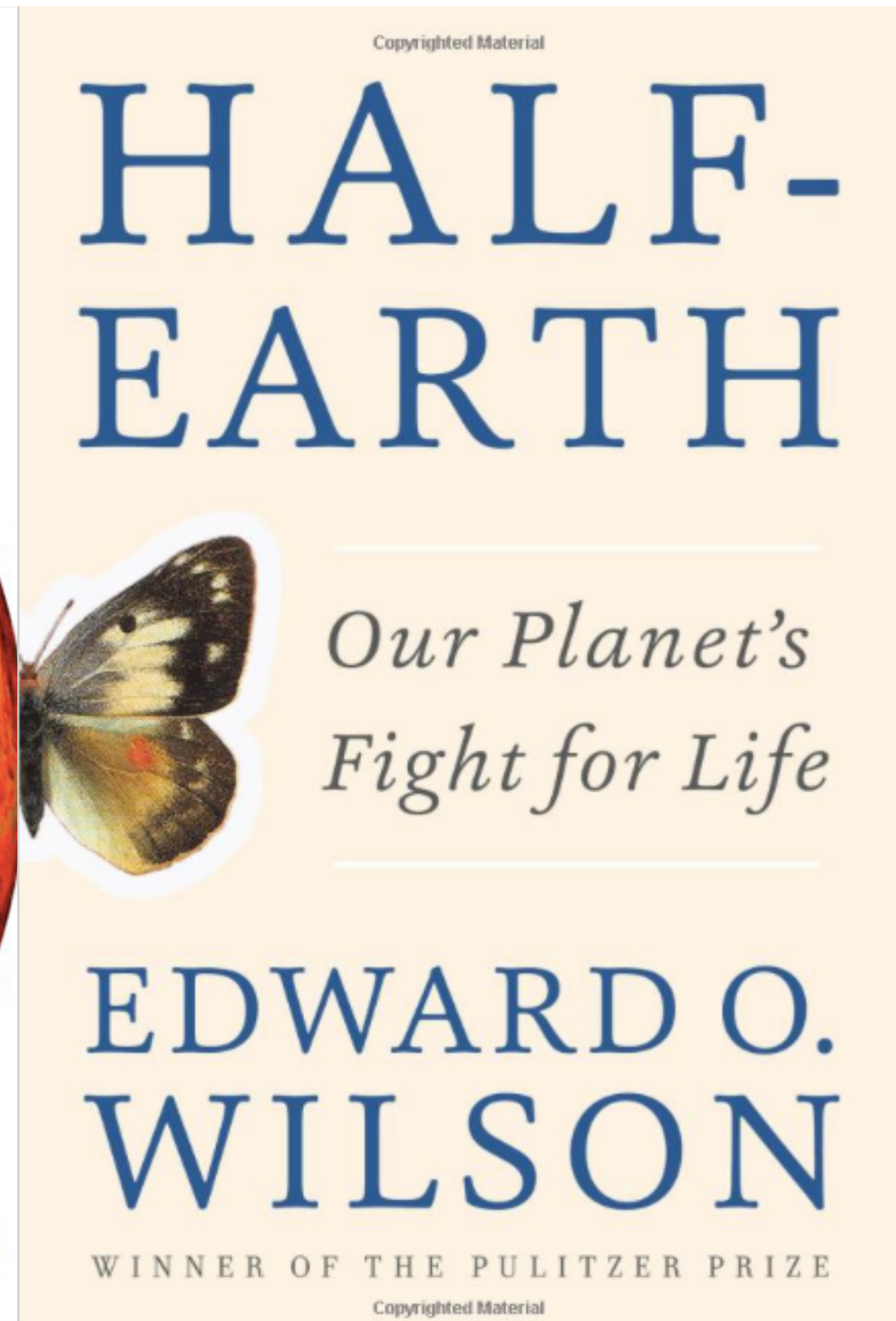
# OUR COMMON FUTURE

THE WORLD COMMISSION  
ON ENVIRONMENT  
AND DEVELOPMENT

*Published in 1987*



*Published in 2009*



*Published in 2016*



## Environmentalism *of the*



*Peter Dauvergne*

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## 12 Conclusion: The Allure and Illusion of Riches

As we've seen, environmentalism as both a social movement and a philosophy of living has long challenged the excesses of capitalism and consumerism. The degree of influence has varied widely across the world, and certainly in some places at some points in time the ideas and energy of environmentalism have hardly mattered. Moreover, environmentalism is neither a unified nor uniform force, as we see, for instance, with the bitter conflicts over windmills and biofuels. Still, looking globally over the past fifty years, environmentalism in all of its diversity has clearly been an important counterforce to the reckless pursuit of economic growth, corporate profits, and personal consumption. Historian Joachim Radkau is right: the Anthropocene is also "the age of ecology."<sup>1</sup>

The age of ecology is a spirited uprising of ecological sensibility. Activists are sabotaging shark finning, scaling oil rigs in the Arctic, going on hunger strikes on the steps of legislatures, and skydiving into packed stadiums. To stop highway construction, they are tunneling underground like moles; to stop logging, they are living in trees like squirrels. "Buy nothing" campaigns are jamming popular culture, and demonstrators are occupying city squares to oppose inequality. Anti-corporate coalitions are fighting agribusiness and open-pit mining. Anti-globalization activists are disrupting finance and trade summits. Nonprofits are forming to advocate for environmental justice in poor, marginalized neighborhoods.

Dauvergne, Peter. *Environmentalism of the Rich* (MIT Press) (Kindle Locations 3350-3362). The MIT Press. Kindle Edition.

**Environmentalism**  
*of the*

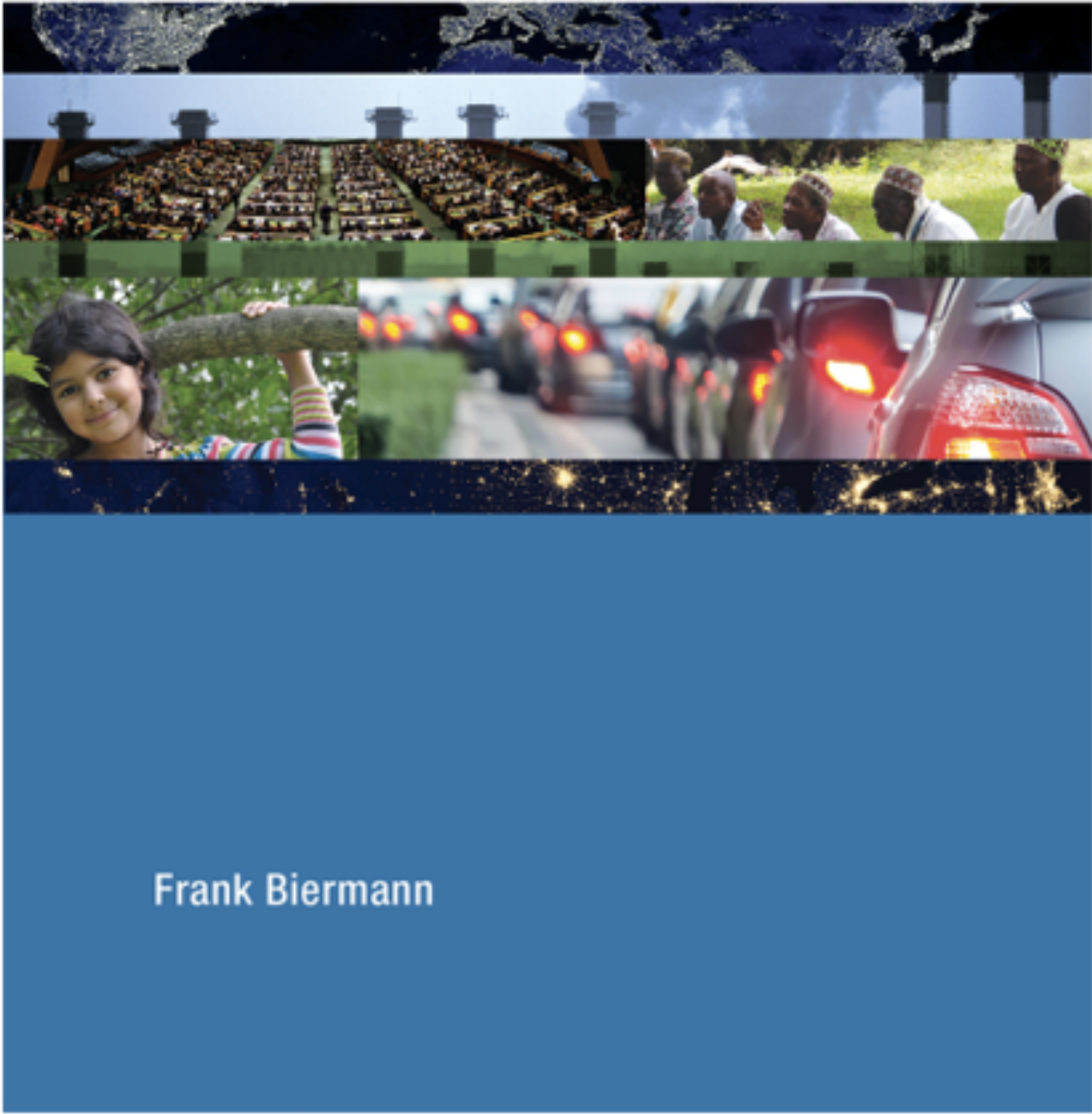


*Peter Dauvergne*



## Earth System Governance

World Politics  
in the Anthropocene



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2 Conceptualization

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4 Architecture

5 Accountability and Legitimacy

6 Allocation

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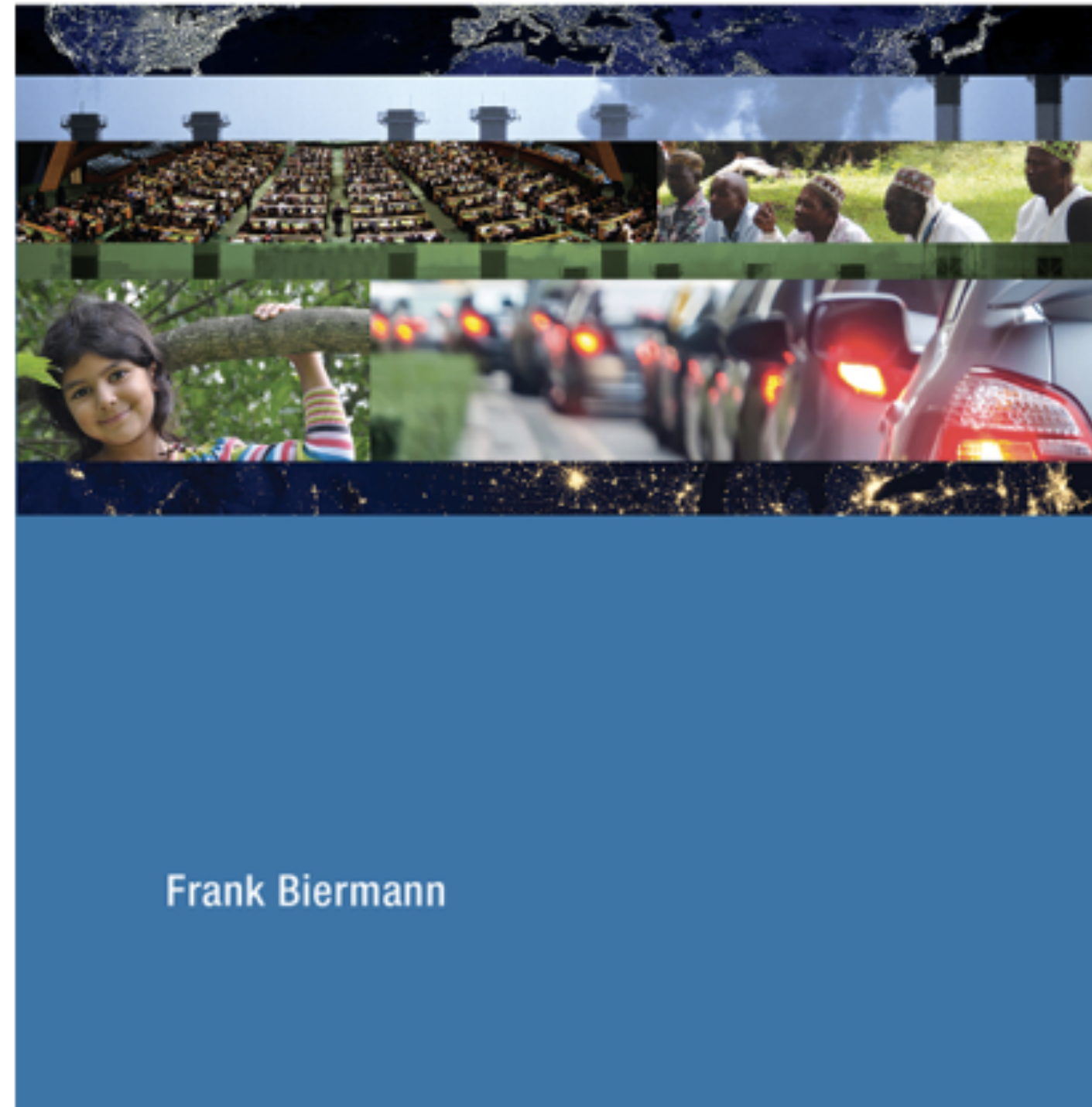
“Bishop, I can fly,” claims the Tailor in the poem that opens this chapter, “Just watch me try!” “A man is not a bird / No man will ever fly,” responds the Bishop, adding that what the Tailor claims is “nothing but a lie.” This exchange between the Bishop and the Tailor in the mediaeval city of Ulm evokes current discussions on the feasibility of effective earth system governance. Today, too, it seems that there are too many bishops and too few tailors. Too few people who believe that, yes indeed, with imagination and courage, we can take off—to better modes of governance and better pathways of human-nature coevolution. Such new modes are undoubtedly needed. Despite twenty years of global negotiations and national policies, carbon dioxide emissions increased in 2010 by 5.9 percent—toward a new record high in atmospheric concentrations (Peters et al. 2012; IPCC 2014b).

Biermann, Frank. Earth System Governance: World Politics in the Anthropocene (p. 203). The MIT Press. Kindle Edition.



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## Toward Effective Earth System Governance

To sum up, the blueprint for a transformation of global institutions that I suggest in this book is not the only answer to the challenge of earth system transformations. Other reforms at national, local, and individual levels are equally important. Yet in a world with over 190 sovereign states, there is no way around strong and effective international institutions. Effective international cooperation must be a basis for earth system governance in the twenty-first century. Rather than a dismissal of the international institutional architecture as ineffective, a concerted effort is needed to bring these institutions into line with the exigencies of the changed political context of earth system transformation in the Anthropocene.

Biermann, Frank. Earth System Governance: World Politics in the Anthropocene (pp. 207-208). The MIT Press. Kindle Edition.

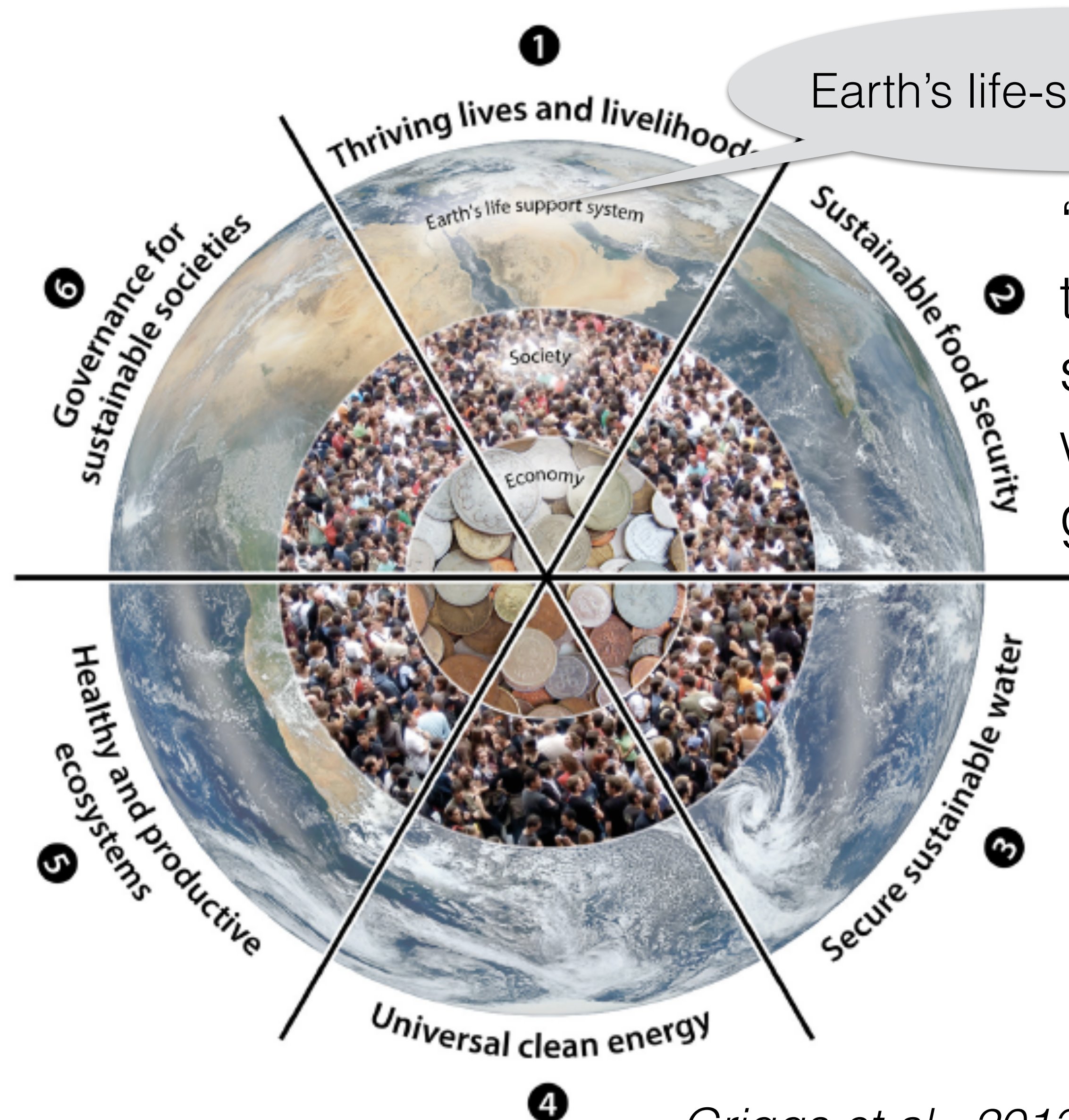






A final comment on the changes needed to address the cause ...





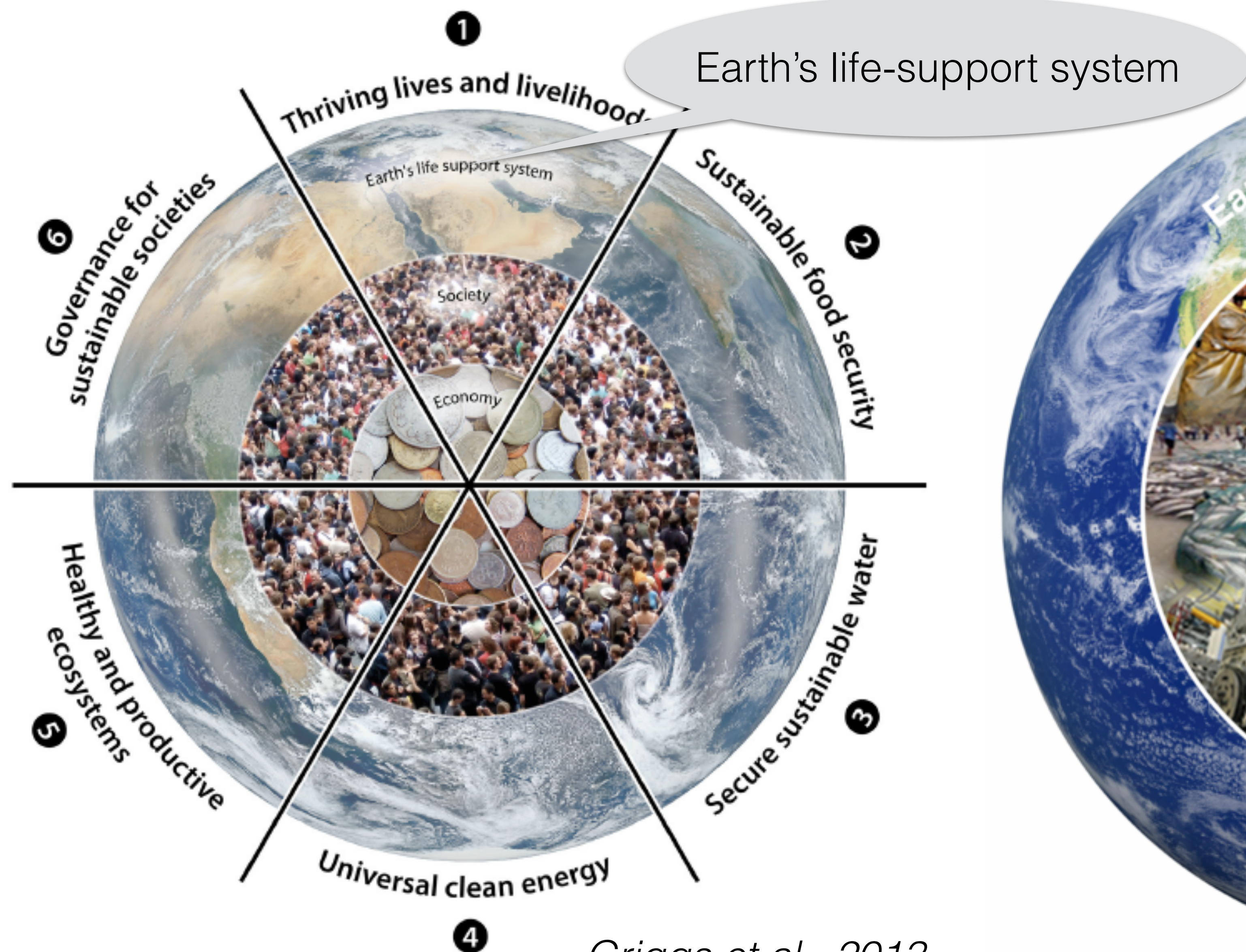
Earth's life-support system

“Sustainable Development is a development that meets the needs of the present while safeguarding Earth’s life support systems, on which the welfare of current and future generations depends.” (Griggs et al., 2013)

*Griggs et al., 2013*

**Figure 1** | Six universal Sustainable Development Goals cutting across economic, social and environmental domains.





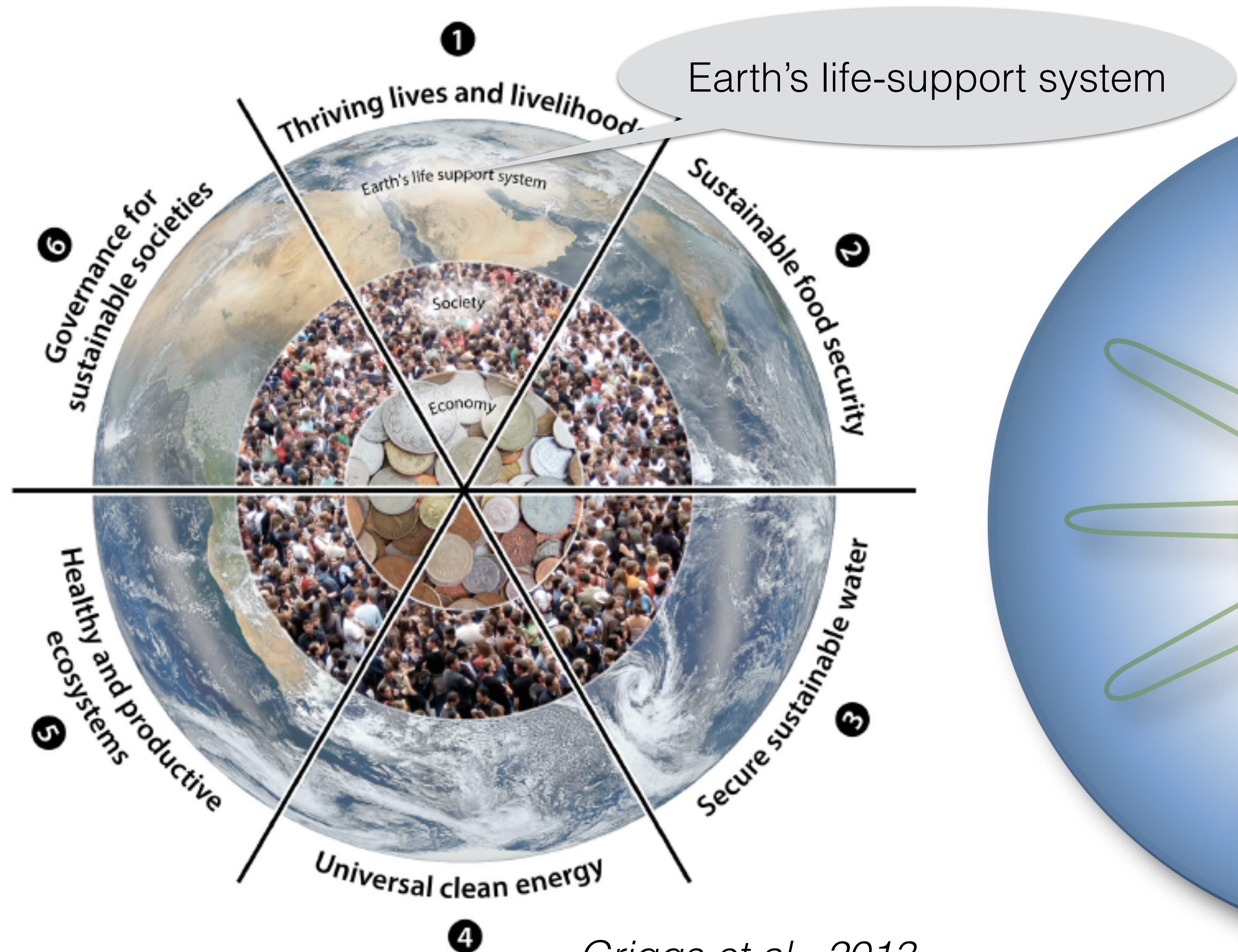
*Griggs et al., 2013*



*Jules-Plag and Plag, 2013*

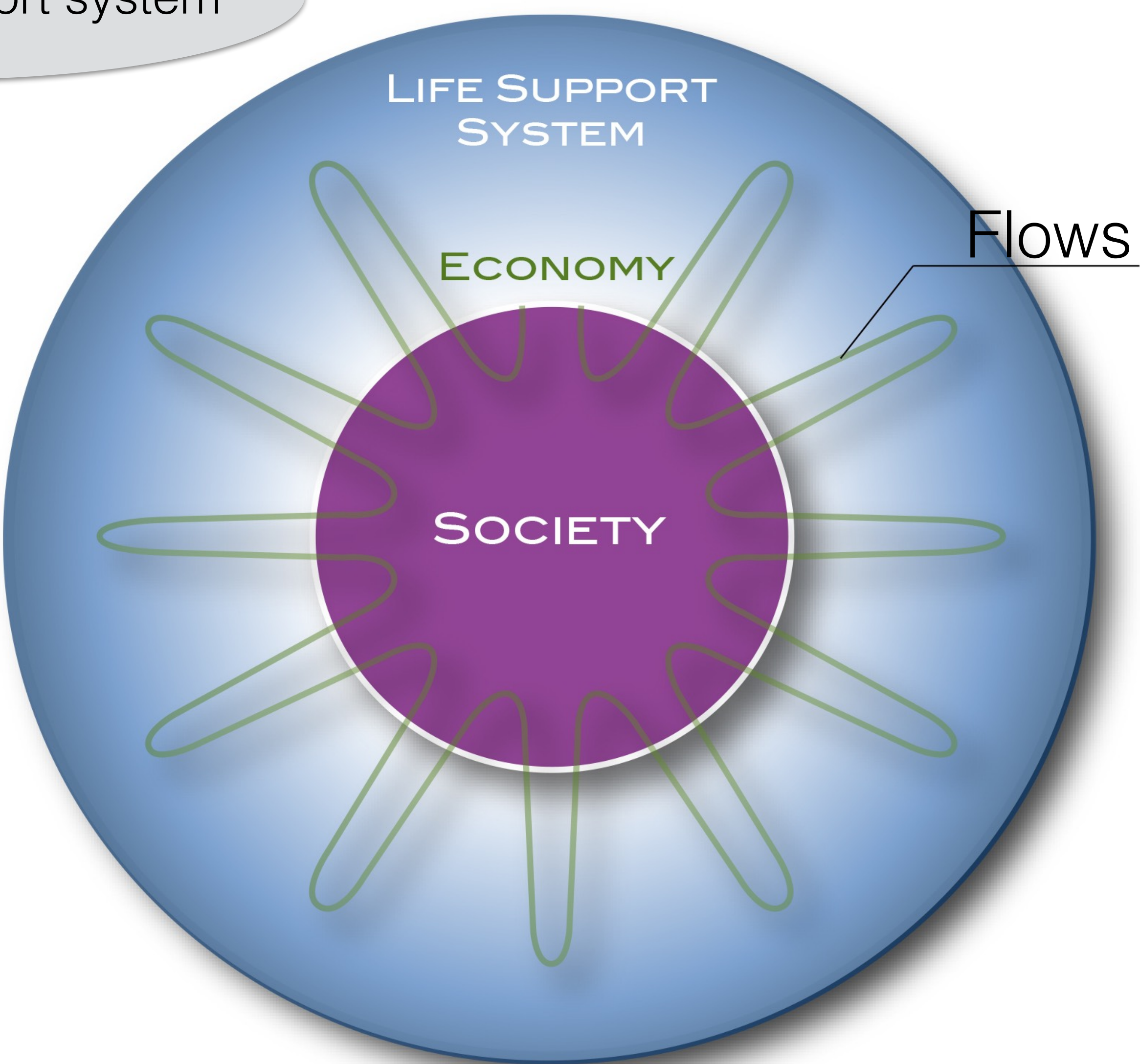
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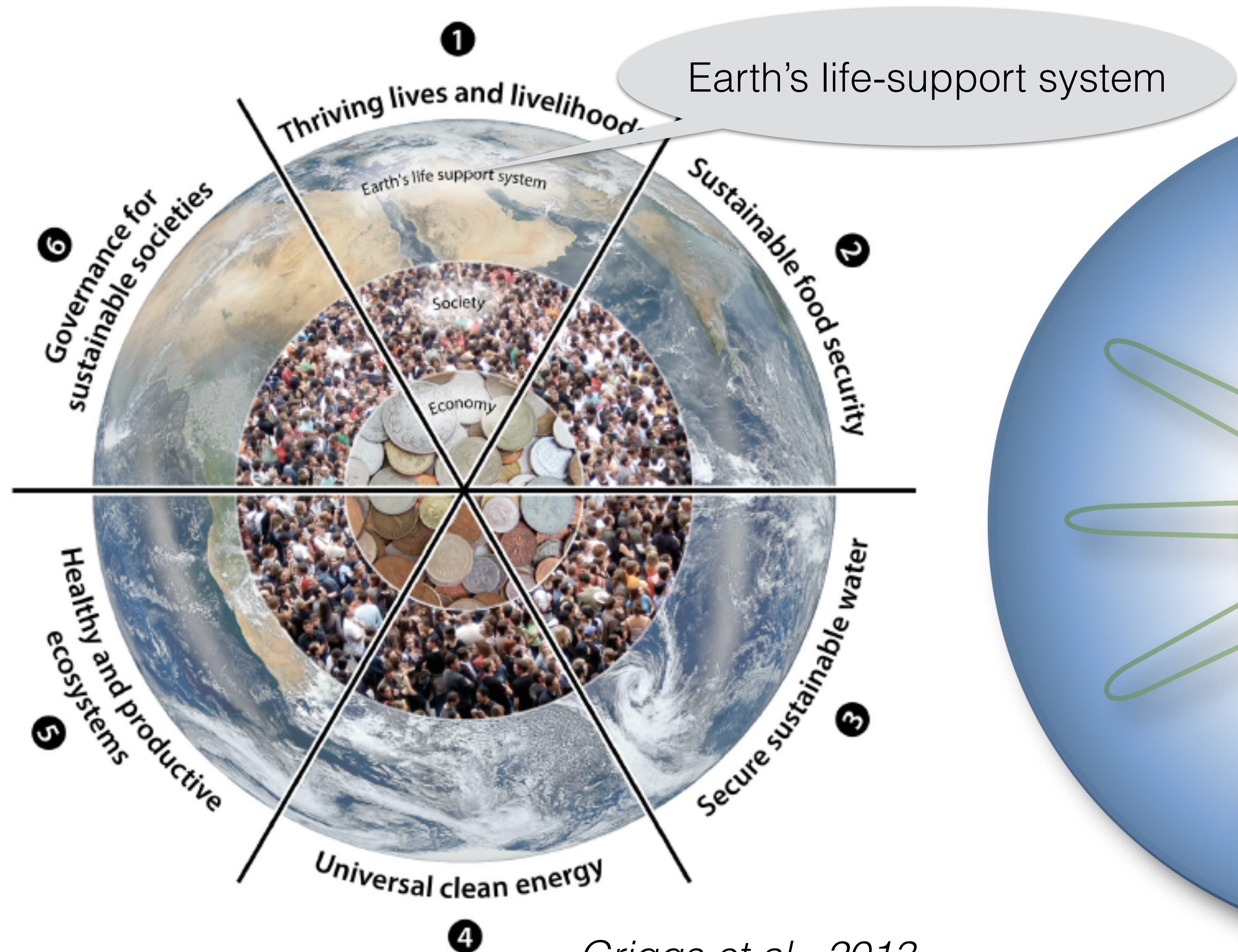
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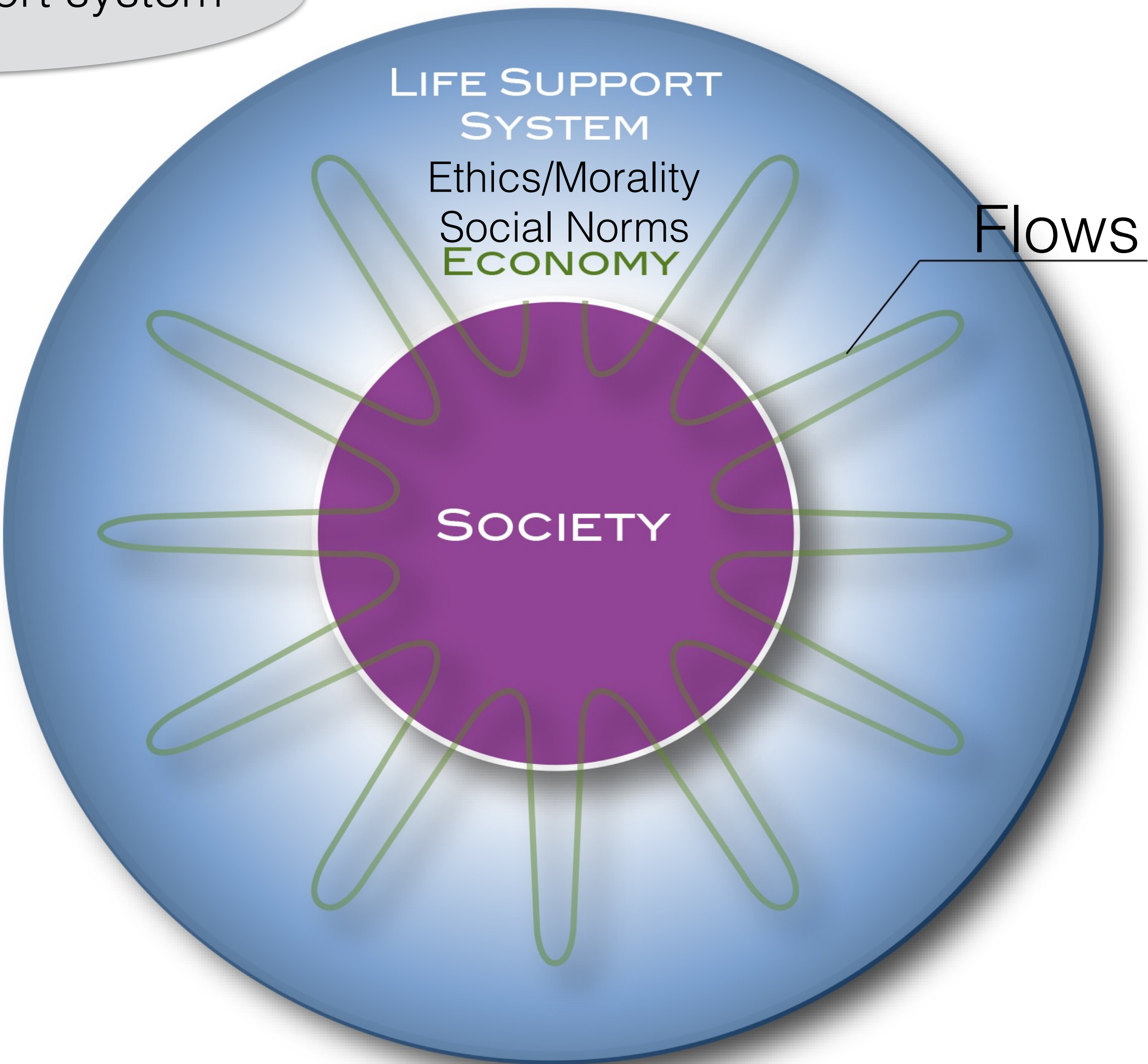
*Jules-Plag and Plag, 2013*





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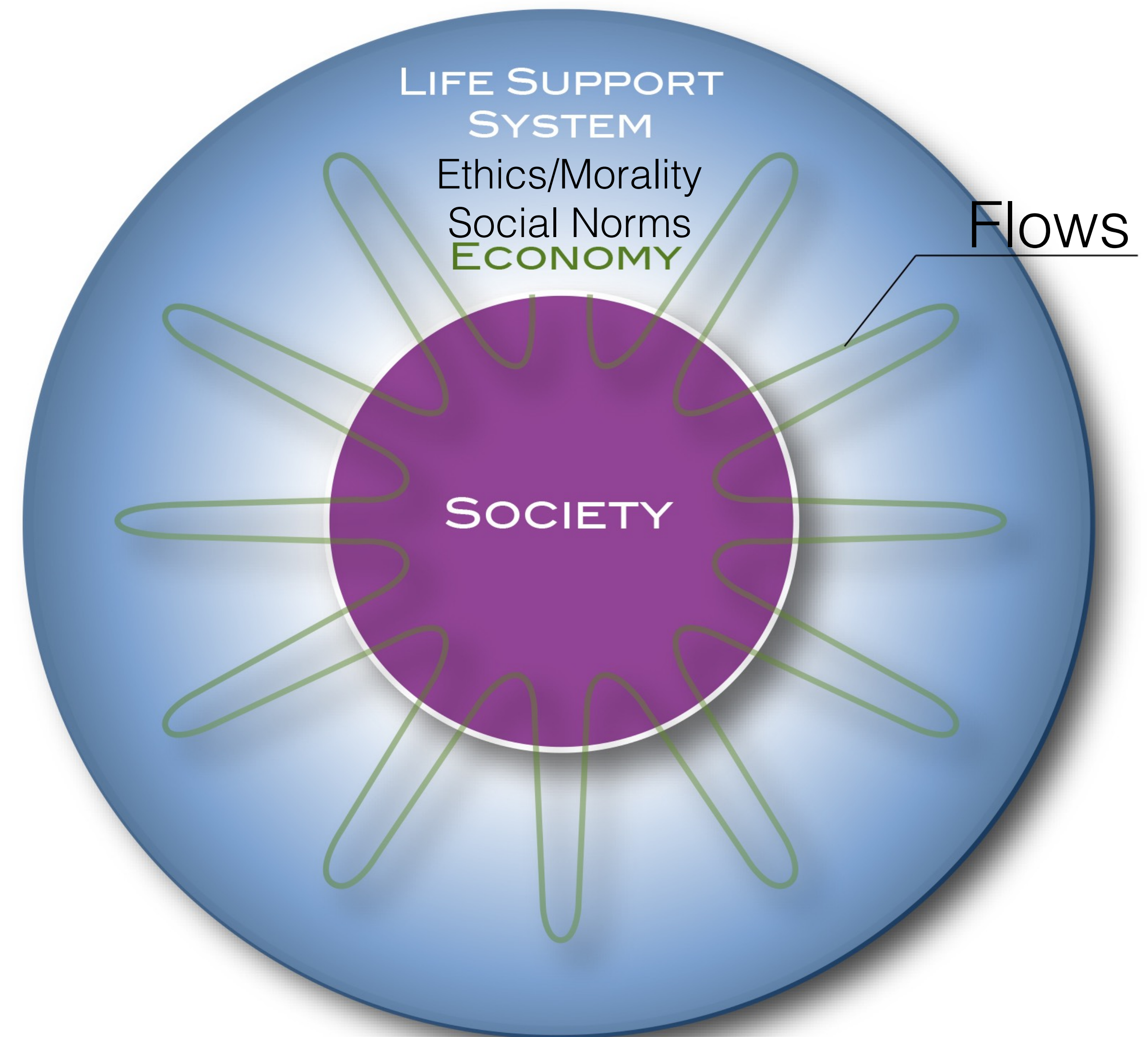
*Jules-Plag and Plag, 2013*



# Conservation and the Earth's Life-Support System

“Sustainable Development is a development that meets the needs of the present while safeguarding Earth’s life support systems, on which the welfare of current and future generations depends.” (Griggs et al., 2013)

Our connection to the Earth’s Life-Support System is economic in nature: Economy controls the flows between the life-support system and us.



*Jules-Plag and Plag, 2013*



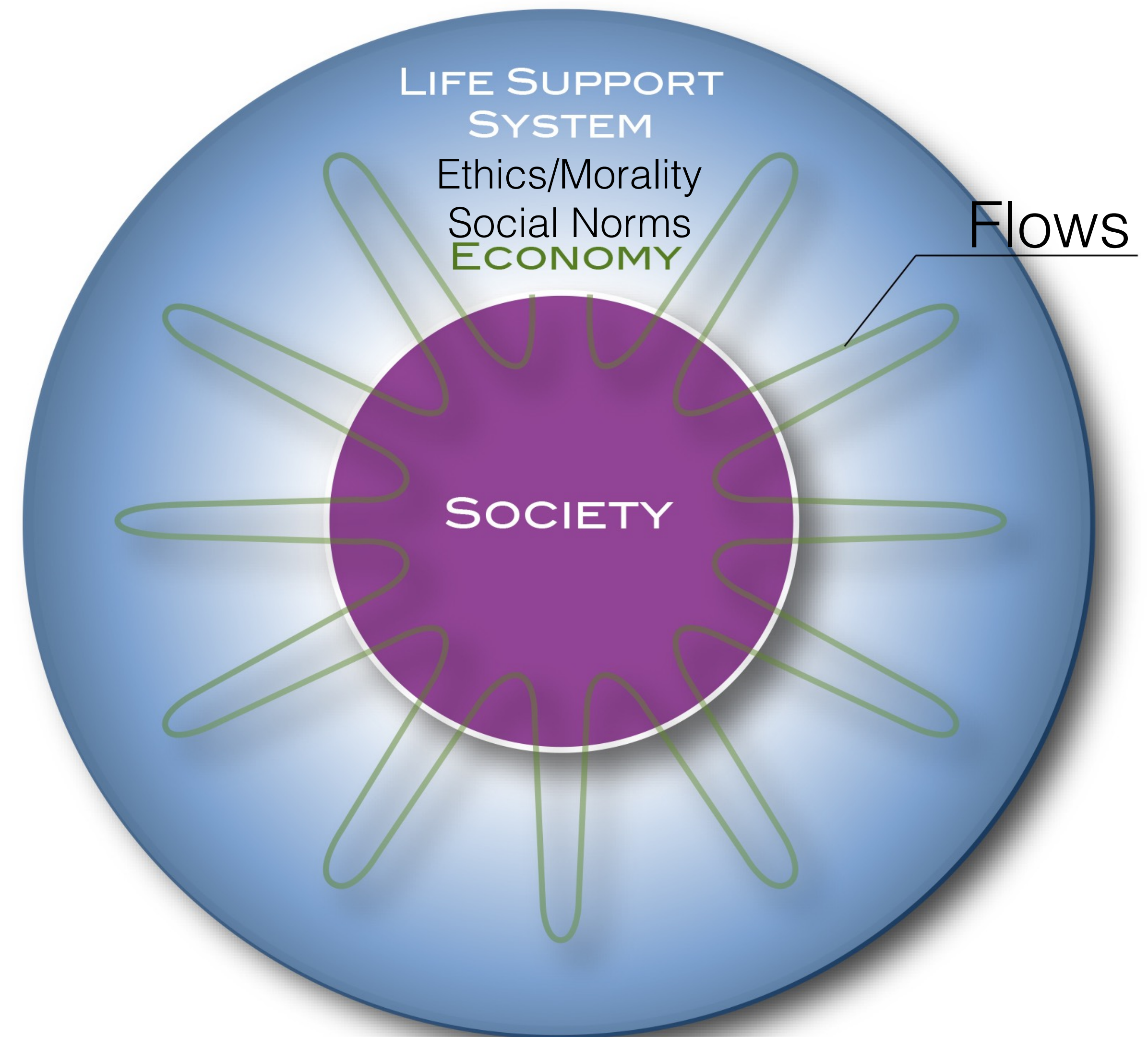
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**Economy for humanity:**

“An economy that meets the needs of the present while safeguarding Earth’s life-support system, on which the welfare of current and future generations depends.”

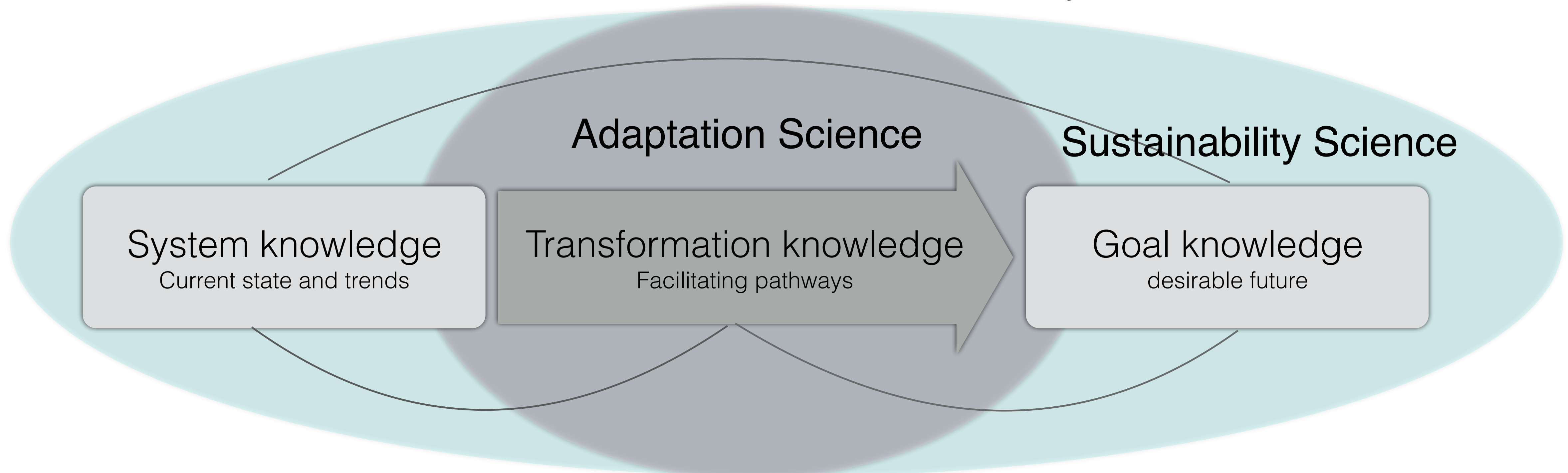


*Jules-Plag and Plag, 2013*

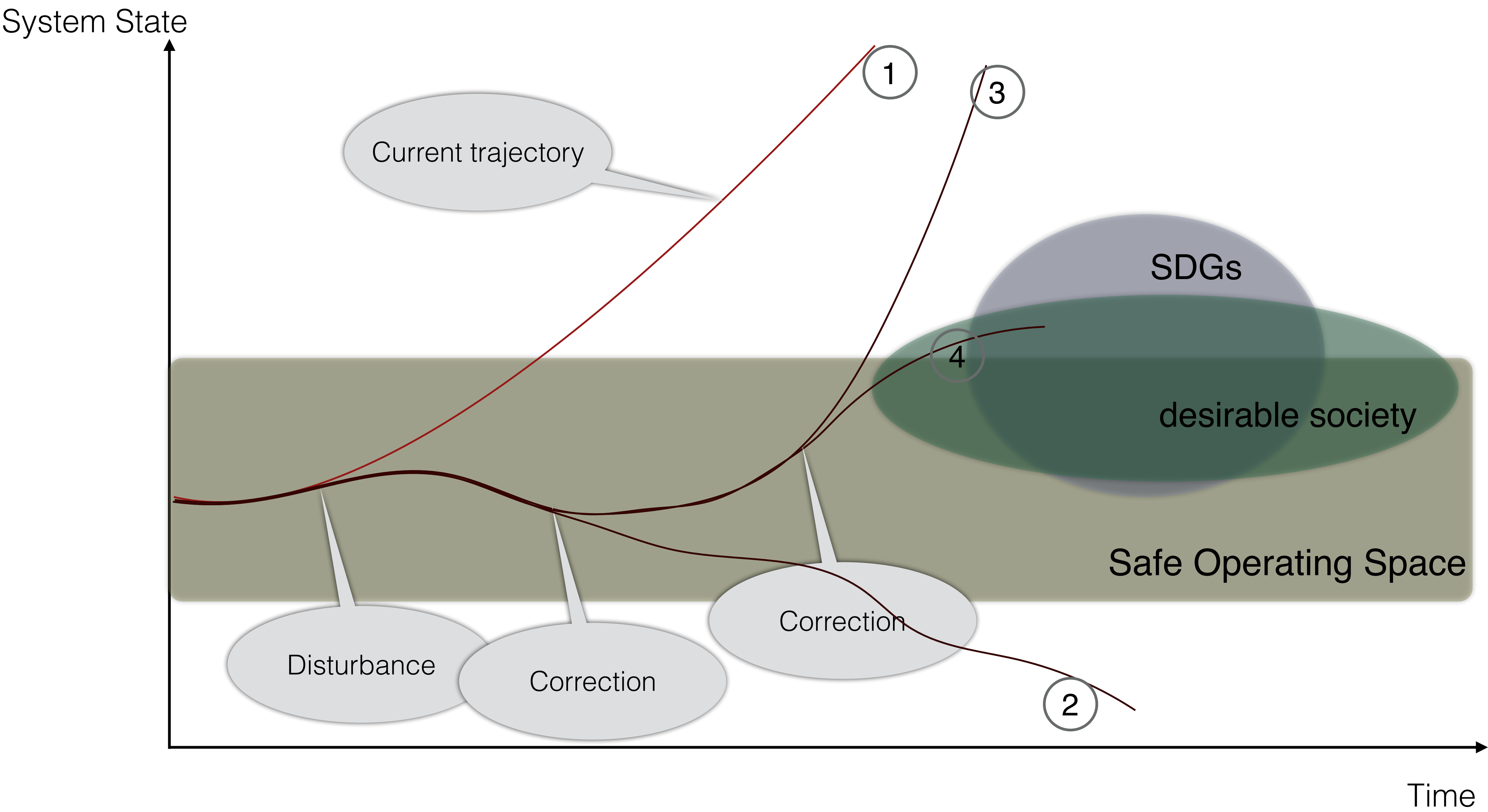


## Foreseeability and Foresight:

- What might happen?
  - Possible threats and hazards
  - Knowing the system trajectory
  - What do we want to happen?
  - How can we impact the system trajectory?
- } System Knowledge
- } Goal Knowledge
- } Transformational Knowledge









# Part 2: Joint Project Report