LEADERS' QUEST

RACE TO RESILIENCE

RACE TO ZERO

FUTURE STEWARDS

10 TOOLS FOR SYSTEMS CHANGE TO A ZERO CARBON WORLD

Created by Future Stewards in partnership with Leaders' Quest and the High-Level Climate Action Champions for UN COP26

TOOLS FOR SYSTEMS CHANGE

The Climate Champions' mission is to help the transition to a zero carbon future by driving transformation in every global system.

Tackling the climate crisis can be overwhelming, but we've found some simple rules for the system change that's required:

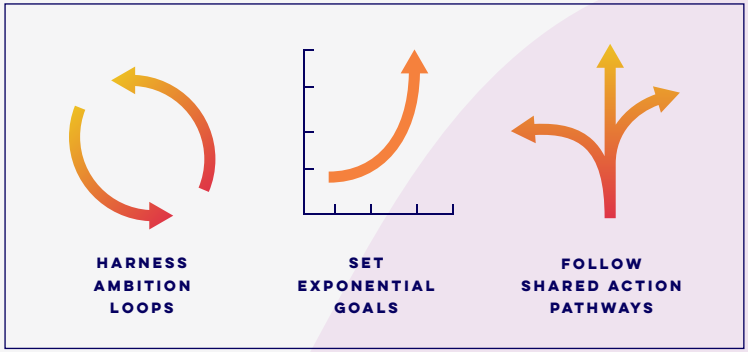
- **Harness ambition loops**
- **Set exponential goals**
- **Follow shared action pathways**

There are several practical frameworks that support these rules. We asked our Future Stewards partners at Leaders' Quest to create a set of approaches and examples to act as a basic toolkit for our work.

This is not a user manual. Think of it as a pick & mix that provides inspiration on the most useful approaches you can employ to raise ambition.

Nigel Topping
High-Level Climate Action
Champion of UK for UN COP26

Gonzalo Muñoz
High-Level Climate Action
Champion of Chile for UN COP26



Feedback loops drive ever higher levels of ambition

Coordinated investment creates positive tipping points of change

Action maps bring everyone together

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HOW TO USE THIS DECK

This deck offers some core approaches to systems change. They aren't intended to be comprehensive, but will act as an entry point to the rich set of futures and systems tools that are available.

Whether you are holding a physical set in your hands or viewing the digital version, we hope you will be able to choose some approaches that can be applied to your area of concern.

This deck has been created for the High-Level Climate Action Champions for UN COP26, so the examples are focused on the transition to a zero carbon world. However, the tools here can be applied to any topic.

We are grateful for the input of many experts in pulling these tools together, and to Thirty Percy whose funds helped bring this vision to life.

Bill Sharpe
Co-founder, Future Stewards
Partner, Leaders' Quest

WHAT'S IN THIS DECK?

1. **Working with the future:** 4 ways to think about it
2. **Three Horizons:** a map for taking action
3. **Regenerative worldview:** from an extractive to regenerative perspective
4. **System maps:** mapping the actors for action
5. **Accelerating transitions framework:** 3 stages of change
6. **Causal loops:** reinforcing and balancing dynamics
7. **Exponential goals:** getting on the S-curve
8. **Tipping points and cascades:** triggering rapid change
9. **Ambition loop:** reaching ever higher levels of ambition
10. **The power of convening:** 10 principles for bringing people together

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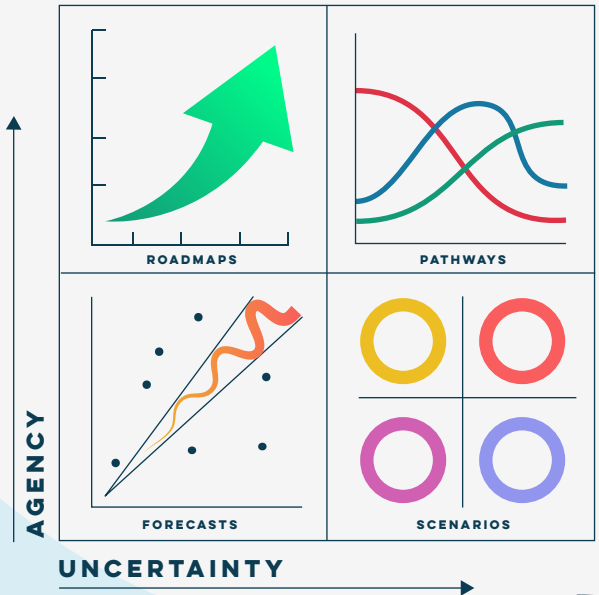
1

WORKING WITH THE FUTURE



SUMMARY

Futures practices help us take action in complex situations where the past is not a good guide to the future. This is typically the case when we want to bring about systems change. Choosing the right approach allows us to combine our ability to act with an appreciation of uncertainty.

WHEN TO USE IT?

To help you choose the most appropriate futures tool for what you are doing. Pathways approaches are needed for most work which involves convening many stakeholders to bring about systems change.

BENEFITS - HOW DOES THIS HELP?

- Forecasts are based on extrapolation and work well where the past is a good guide to the future
- Roadmaps bring people together for shared action and are good for shaping technology evolution
- Scenarios tell stories of the uncertain future we might face, and are useful ways to test our plans
- Pathways enable flexible navigation towards a visionary goal, whilst leaving adaptive and transformative moves open to deal with emergent and unexpected conditions

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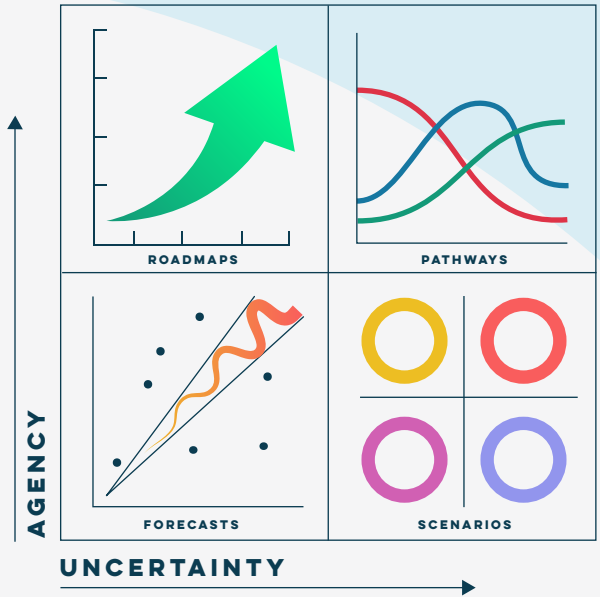
4 WAYS TO WORK WITH THE UNCERTAIN FUTURE

ROADMAPS

Roadmaps develop agency by pooling purpose around emerging opportunities. They coordinate the actions of many players for shared learning and deployment of new solutions e.g. mobile communications through five generations.

FORECASTS

Governments and businesses make quantitative forecasts based on continuing past trends. They work well until the unexpected happens, like the financial crash or the 2020 pandemic. They are not good for handling qualitative uncertainty.



PATHWAYS

Climate change action needs us to hold the visionary and directional intent of roadmaps, while being ready and able to adapt to uncertainty and learning. Three Horizons helps hold together all the tools we need for treading the path.

SCENARIOS

Scenarios organise our thinking around a small number of major uncertainties, and create stories about what those worlds would look like. They can be used like wind-tunnels to test our strategies.

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THREE HORIZONS

2

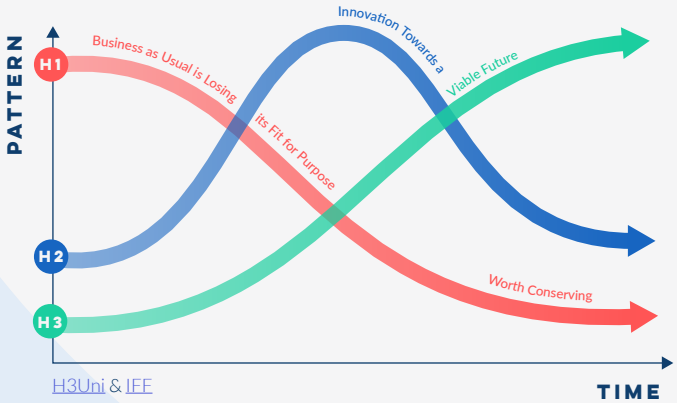
SUMMARY

A simple and intuitive way to map patterns of change:

Horizon 1 is the dominant way things are done now, which shows signs of strain and lack of fit to the future.

Horizon 3 is how we want things to be in the future (the vision we're working towards).

Horizon 2 is an arena of transition, where innovations get established to help make our desired future a reality.



H3Uni & IFF

WHEN TO USE IT?

To bring different stakeholders onto the same page, to create a map of your area of concern that includes the current challenges you face (H1), your vision(s) of the future (H3) and the innovation and action you can focus on to get there (H2).

BENEFITS - HOW DOES THIS HELP?

- Helps a group make sense of any situation demanding systemic change, and sets up the use of System Maps (see tool)
- Gives people a shared language and map for understanding the problems they are facing
- Distinguishes between innovation that sustains the current system (H2-) from transformative innovation (H2+)
- Creates a template for constructive dialogue between people who are responsible for the way things are and those who want change
- Helps teams get into action

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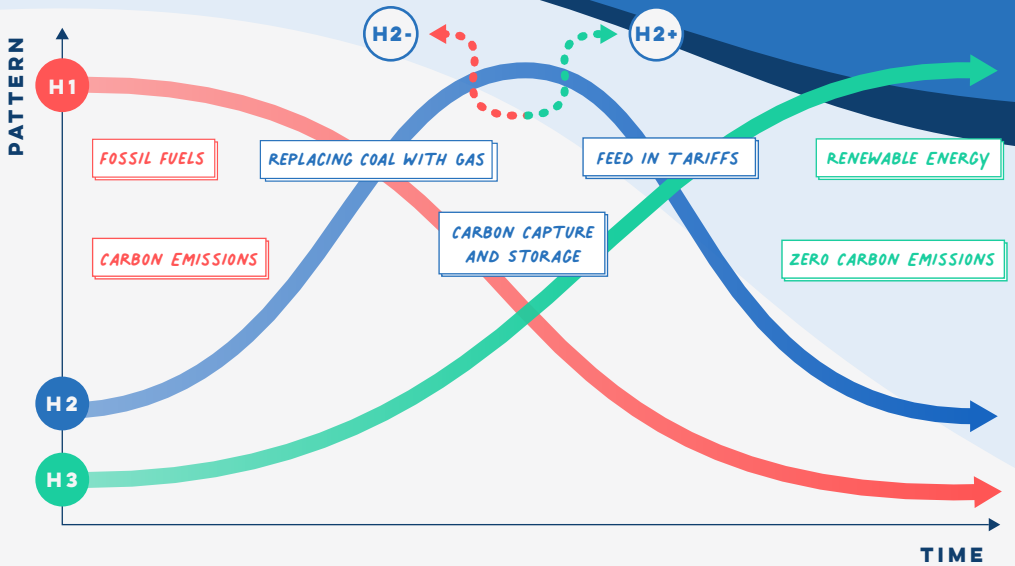
EXAMPLE: ELECTRICITY TRANSITION



This tool identifies innovations that, even if helpful in the short term, will not bring about the change we want overall - we call these innovations **H2-**. It also identifies policies and innovations that could be the growth points of the new H3 vision - what we call **H2+**.

In the case of power, we can see that replacing coal with gas would be **H2-**, while feed-in tariffs are **H2+**, thus encouraging the shift to renewables while allowing competition between them. Carbon Capture and Storage (CCS) has a future-oriented use, but might also delay the shift away from fossil fuels.

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REGENERATIVE WORLDVIEW

Diagram: Bill Reed, Rengenesis Group, Inc. reed@regenesisgroup.com

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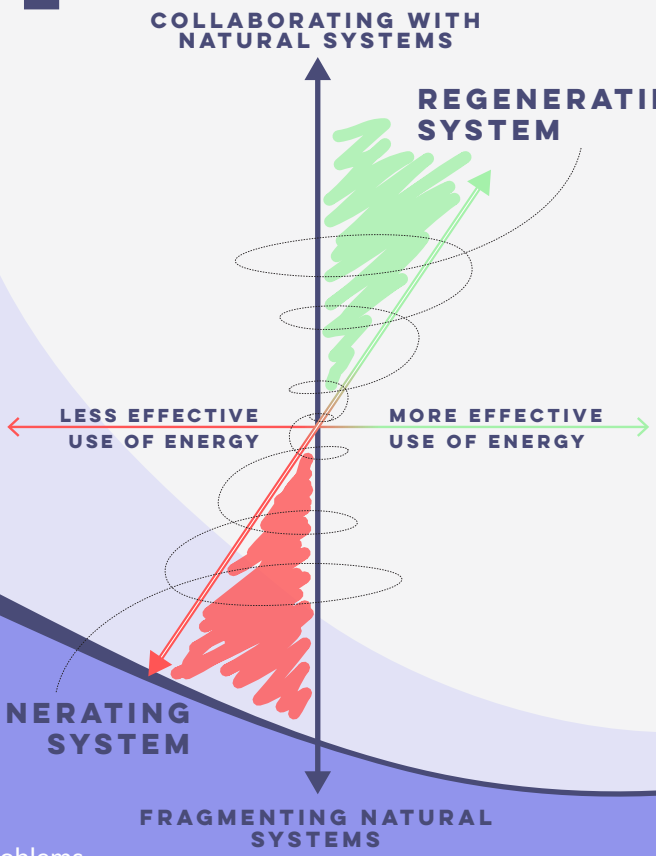
SUMMARY

The climate crisis is part of a larger imperative for humankind to bring patterns of life back to a positive relationship to the planet. Doing less harm is not enough. Every system should aim to have positive effects on all the others of which it is a part.



REGENERATIVE
Co-evolution: humans collaborating with nature

RESTORATIVE
Humans renewing damaged natural systems

SUSTAINABLE
No additional damage

GREEN
Relative improvement

EXTRACTIVE
Human-centered; minimal standards

WHEN TO USE IT?

To reframe long-term ambition towards the abundance of regenerative futures that serve people, planet and prosperity (rather than a competition between economy and environment).

BENEFITS - HOW DOES THIS HELP?

- Orients change towards potential, rather than problems
- Aims for regenerative systems so we can harness positive returns for change
- Unifies thinking across social and ecological systems
- Frames vision and ambition for Horizon 3, when using Three Horizons

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WHAT DOES IT MEAN TO BE REGENERATIVE?

How does your organisation interact with its direct stakeholders? What are the inputs and outputs of the day-to-day operations and are they in a healthy relationship with immediate social and ecological processes?

How does your organisation interact with its indirect stakeholders and the common ground it shares with them? Is there mutuality, where each develops the life and potential of the other?

Does your organisation see itself as part of a broader ecosystem? Connected not just to its direct and indirect stakeholders but the entire ecological system where nothing you do can be separated from its wider impacts.

For a farmer, *it might be a mindset shift from being an owner/manager of a resource to a steward of the land. They may focus directly on soil health and animal welfare as a first step.*

For a mining company, *it can mean going from solely extractive processes to seeing themselves as part of a bioregional economy in which they are supportive of thriving local communities.*

For everyone, *it means seeing your organisation as part of the living planet, with shared responsibility for realising the potential of all the systems of which it is a part.*

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SYSTEM MAPS

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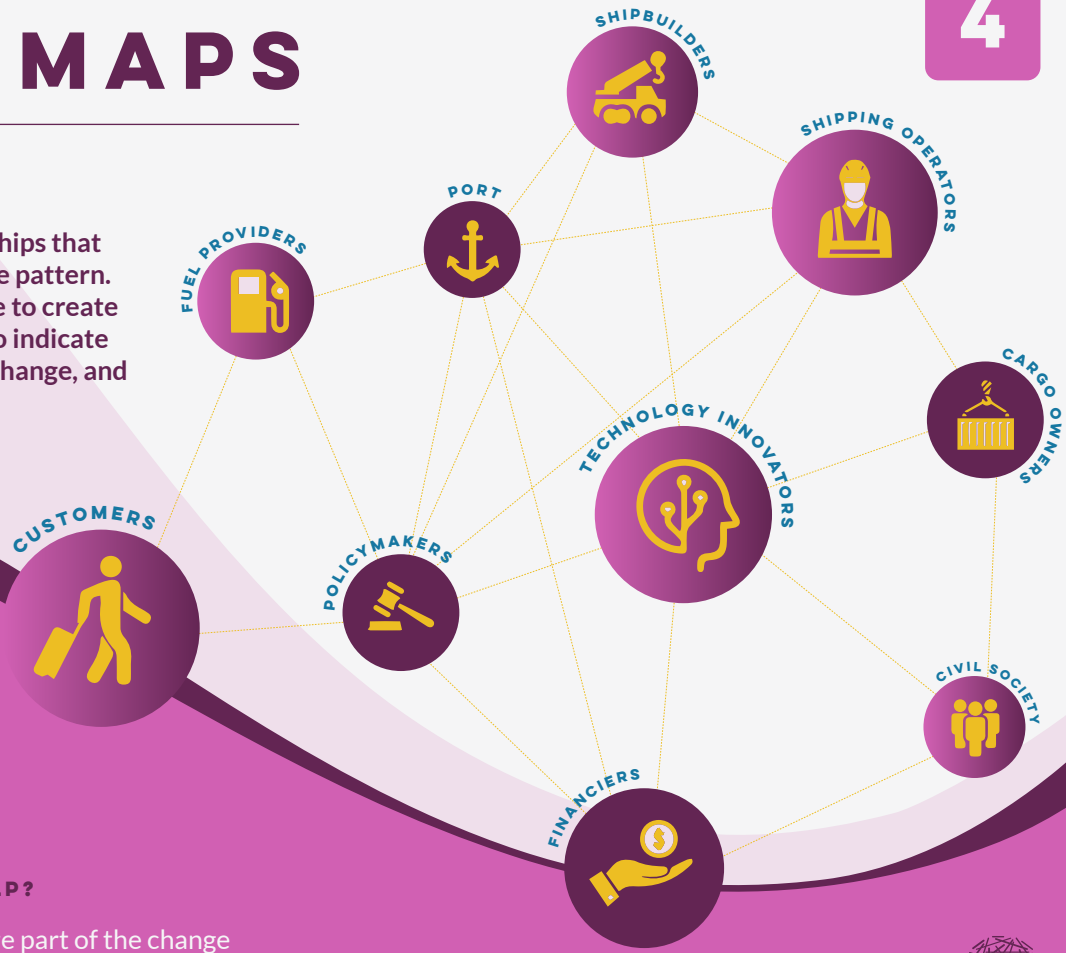
SUMMARY

A system is a set of dynamic relationships that leads to a repeatable and recognisable pattern. To reach a zero carbon world, we have to create new patterns. We use system maps to indicate the actors involved in the process of change, and the relationships between them.



WHEN TO USE IT?

To identify who matters to a transition, how they can be part of the new pattern, and where campaigns can be focused.

BENEFITS - HOW DOES THIS HELP?

- Enables everyone to see how they are part of the change
- Identifies potential for reinforcing ambition loops between the actors within and across national boundaries
- Provides focal points for Climate Champions' campaigns to enrol people into the shared pathways of action

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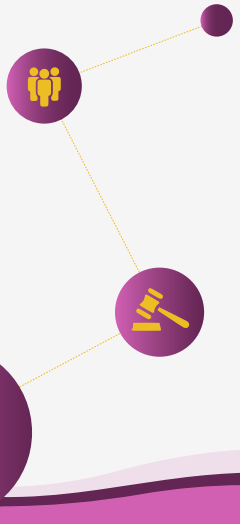
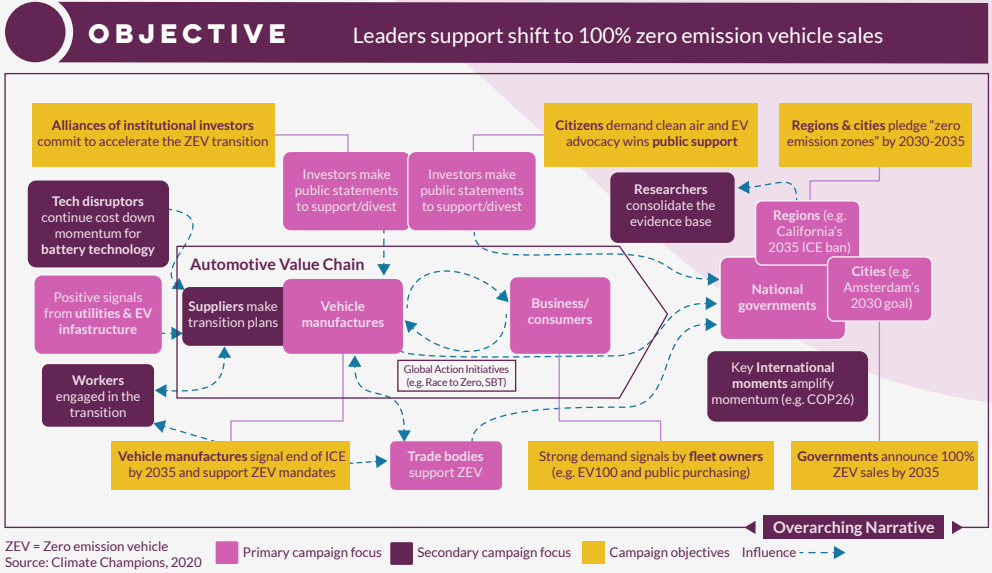
EXAMPLE:
ZERO EMISSION LAND TRANSPORT

System maps provide focal points for Climate Champions' campaigns. They aim to build reinforcing ambition loops between the actors within and across national boundaries, taking them through the three stages of transition (along shared pathways).





Climate Action Pathway Transport Action Table 2021

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ACCELERATING TRANSITIONS FRAMEWORK

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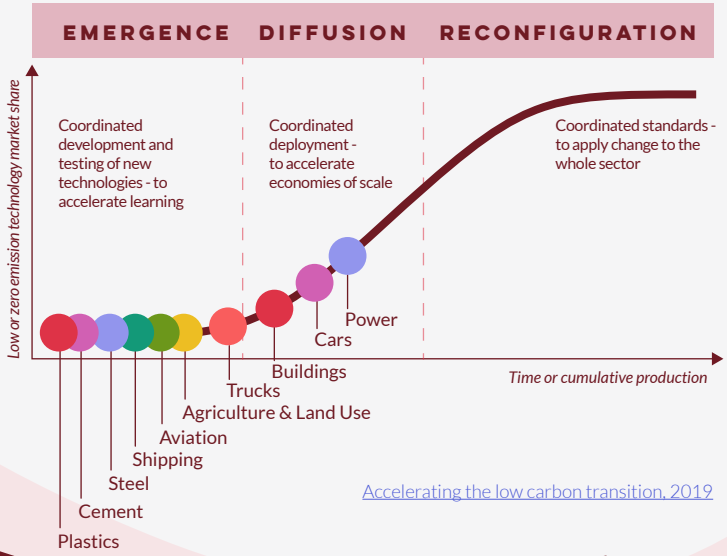
SUMMARY

System transitions generally happen in three stages: emergence, diffusion and reconfiguration. At each stage, different policies, and different kinds of international cooperation, are likely to be effective in accelerating the transition.



Accelerating the low carbon transition, 2019

WHEN TO USE IT?

To identify the form of national action and international cooperation most likely to be effective in any given sector appropriate to the stage of transition that it has reached.

BENEFITS - HOW DOES THIS HELP?

- Helps identify which actors can cooperate, in which ways, to accelerate the transition in a given sector at a given time.
- Focuses national policy and international coordination on joint action (rather than negotiating targets).
- Organises cooperation into stages that can grow in strength over time. At the beginning of a transition, we do not need consensus among all actors on the entirety of the solution. It can be more achievable, and more effective, to coordinate among a small group on the next steps to be taken. As progress is made, this can pave the way for deeper agreements among larger sets of actors.

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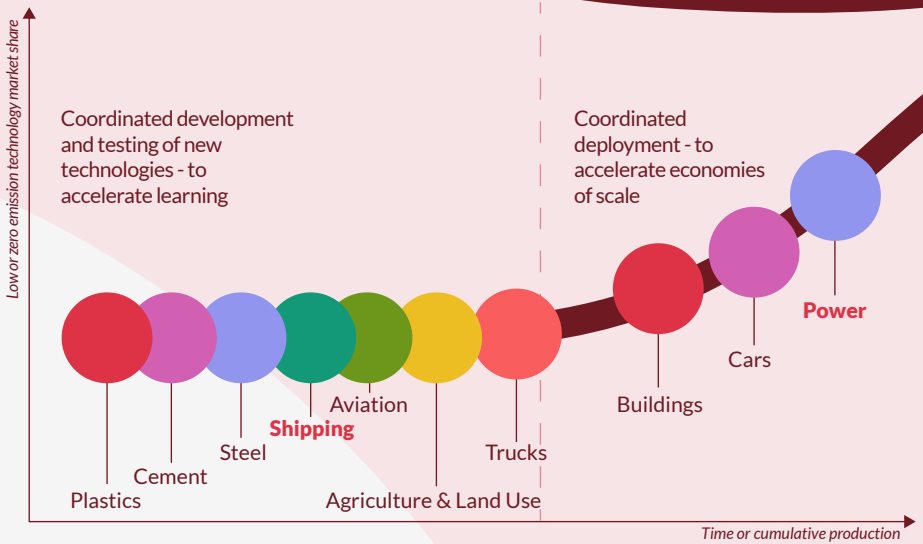
EXAMPLE: POWER & SHIPPING

Each sector will go through the stages of transition in its own unique way.

In the 'emergence' stage of the transition to clean power, several countries contributed to the development of solar photovoltaics and wind turbines. Now that transition is into the 'diffusion' stage, these technologies are becoming widespread. Practical assistance with electricity market reforms can help countries mobilise investment and make clean power affordable. Each country that deploys solar and wind technologies helps bring the cost down for others.

As the transition approaches 'reconfiguration' stage, wider shifts in power systems and related socio-economic systems become the central concern. Priorities for cooperation include the development of enabling technologies (such as energy storage) and the development of new economic opportunities for communities (such as coal-workers) who could otherwise be left behind by the transition.



The shipping sector is still at the 'emergence' stage of transition, where coordinated development and testing of zero emission technologies is a high priority. To move to 'diffusion', countries will need to work together to create the conditions for first deployment on international routes. Eventually, reconfiguration of the sector will require global agreement on a new set of rules that makes zero emission technologies the only allowable option.

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CAUSAL LOOPS

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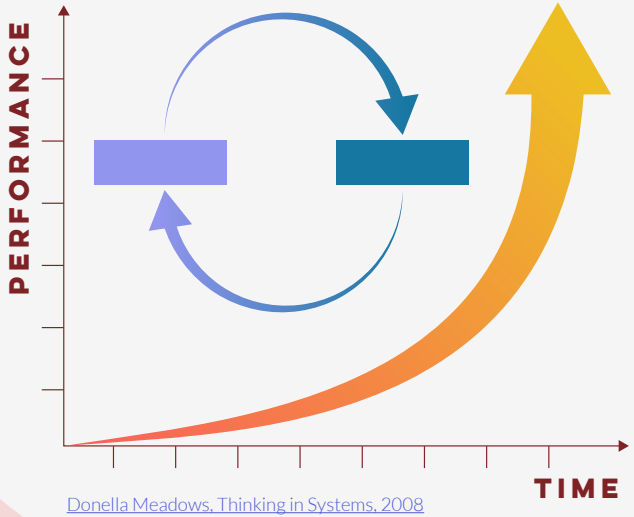
SUMMARY

Modeling a situation with causal loops helps us see how it behaves over time. For example, how effects become causes, how some things are reinforced over time and others are weakened. This helps us understand the dynamic effect of policies, and see what interventions might be most effective.



Donella Meadows, Thinking in Systems, 2008

WHEN TO USE IT?

To bring about rapid change; to see how a reinforcing loop starts to draw actors and resources into new solutions; to see what will act to balance or oppose the change.

BENEFITS - HOW DOES THIS HELP?

- Identify interventions that are self-propelling / self-amplifying
- Avoid interventions that are self-defeating / self-limiting
- Plan a range of interventions so that their effect is more than the sum of their parts (not less than)
- Identify points of leverage for systems change, i.e. places where there is a high return on effort
- Use as a modelling tool for ambition loops and system maps

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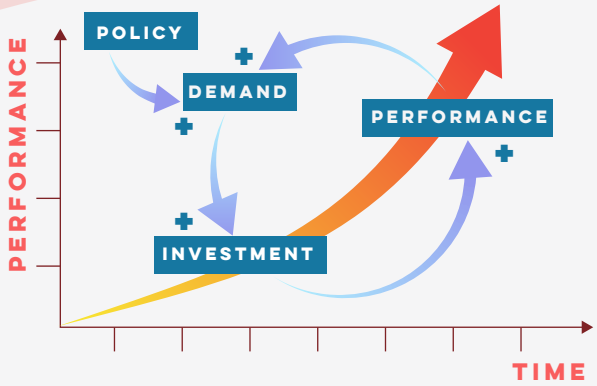
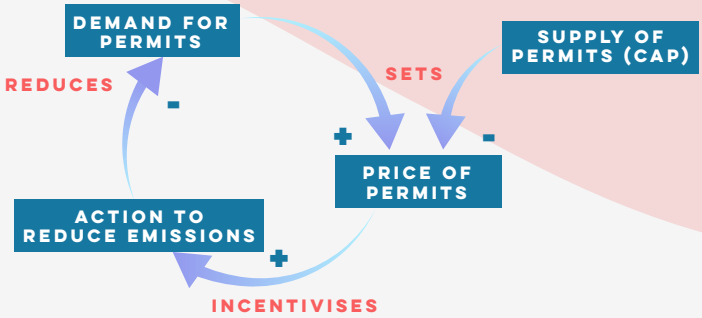
EXAMPLES: REINFORCING AND BALANCING



REINFORCING (R): EXPONENTIAL IMPROVEMENT

New technologies usually benefit from reinforcing feedbacks. For example, 'learning by doing' (the more we make something, the better we get at making it), and economies of scale (the more we make it, the cheaper it becomes, then demand grows and we make more of it). Policies that directly support the development and deployment of new technologies help to strengthen these reinforcing feedbacks. This can lead to exponential improvement in performance and price reduction, as in the case of solar and wind power.



BALANCING (B): REDUCING INCENTIVES

Sometimes policies inadvertently create balancing feedbacks, which tend to slow down or prevent change.

In a cap-and-trade emissions trading system:

... the more one participant reduces their emissions,
... the less demand there is for emissions permits,
... the lower the carbon price becomes,
... the less incentive there is for other participants to reduce their emissions.

The EU has introduced a 'market stability reserve' to its emissions trading system, making it function more like a tax, to limit the extent of this effect.

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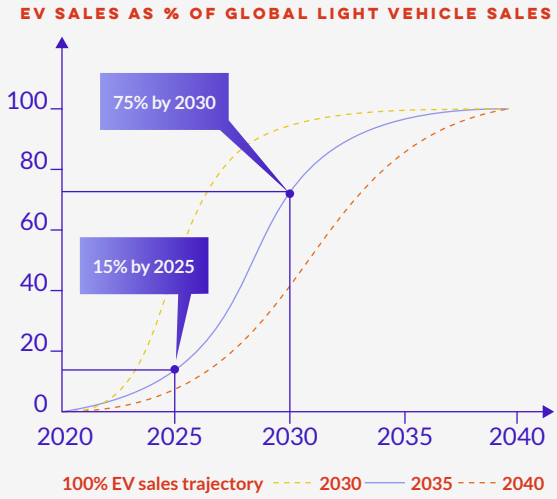
EXPONENTIAL GOALS

SUMMARY

Changes can happen rapidly when everyone settles on one approach. We can then move along an 'S-curve' of exponential change, where new technology improves its performance, causing lower costs and increasing adoption by society.

ZERO EMISSION LIGHT DUTY VEHICLES

100% zero emission light vehicles sales by 2035 will require reaching 15% by 2025 and 75% by 2030



Climate Action Pathway, Transport, Action Table, 2021

WHEN TO USE IT?

To focus attention on technologies consistent with a zero emission future, and what can be done to help them develop and spread rapidly through markets and society.

BENEFITS - HOW DOES THIS HELP?

- Directs attention to the new zero emission solutions and how to bring them into being (Horizon 3 innovation) instead of incremental change to existing solutions (Horizon 1 improvement)
- Encourages focus on solutions with high potential for improvement from learning and deployment
- Helps us appreciate the potential for rapid change and set ambitious goals beyond current performance of new technologies

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EXAMPLE: SOLAR AND WIND POWER

Solar and wind power technologies are experiencing exponential growth. In the past decade, each time the amount of global, installed solar capacity has doubled, its cost has declined by 34%. Each time the amount of installed onshore wind capacity has doubled, its cost has fallen by 17%.

The pace of change has far outstripped our expectations. Global deployment of solar PV in 2020 was over 10-times higher than had been predicted just 15 years earlier.

Solar and wind are now the cheapest sources of power in most parts of the world, and make up more than 80% of new global power capacity additions.

IRENA World Energy Transition Outlook 2021 & Explaining the exponential growth of renewable energy, WRI, 2021

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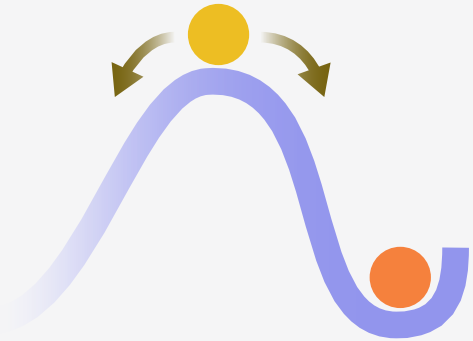
TIPPING POINTS AND CASCADES

SUMMARY

A tipping point is a place where a small intervention can trigger a large response, sending a system into a qualitatively different future state. In transitions, tipping points can exist where a new solution becomes more affordable, accessible, profitable, attractive, socially acceptable, or higher performing than old solutions.

Once a critical mass of actors has adopted a new technology or practice this can prompt the rest to follow, triggering a rapid system-wide cascade of change throughout the sector.



WHEN TO USE IT?

To identify the level of effort, or extent of an intervention, that could lead to disproportionately large results and can therefore serve as a policy or international cooperation goal.

BENEFITS - HOW DOES THIS HELP?

- Helps identify opportunities to greatly accelerate the pace of change, making the transition self-propelling
- Provides a positive goal for everyone to aim for: the point where a new way of doing things becomes cheaper, better, more accessible, more profitable or otherwise more attractive than the old
- Provides clarity of objectives in the midst of complexity

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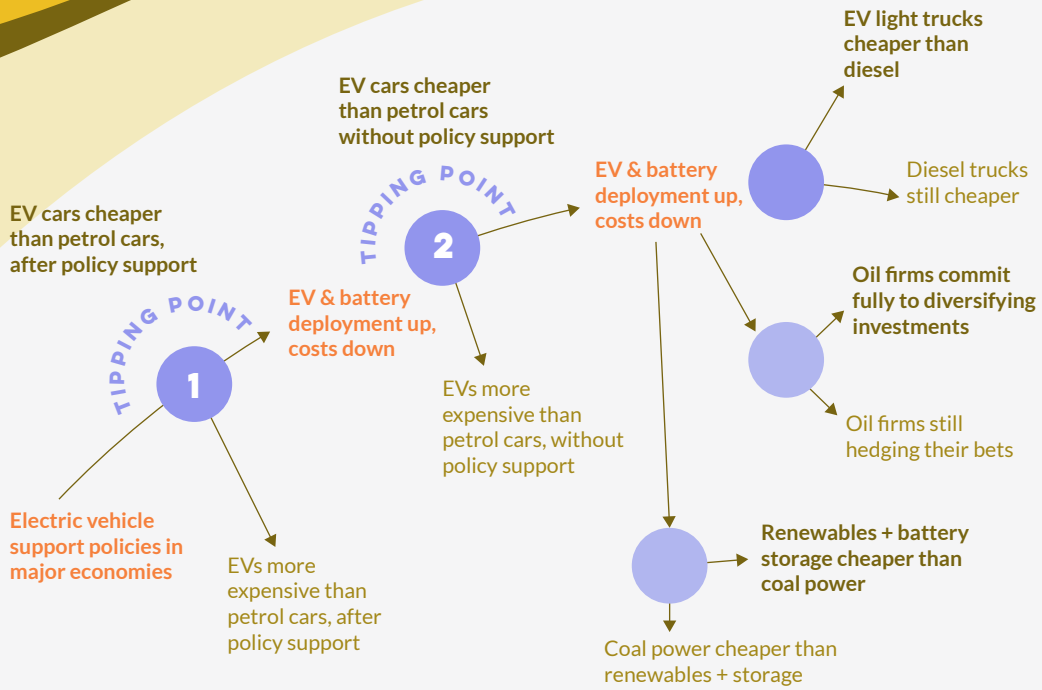
EXAMPLE: EV TIPPING POINTS AND CASCADES

In Norway, a combination of subsidy and tax has made electric vehicles (EVs) cheaper to buy than petrol cars. Together with other supporting policies, this appears to have activated a tipping point in consumer preference. EVs comprise over half of Norway's new car sales now (around 10 times their market share in most developed countries). Similar actions in other countries could set the scene for a cascade of change throughout the sector



Climate Policy, Sharpe & Lenton, 2020 & Positive Tipping Points for Food and Land Use Transformation, 2021

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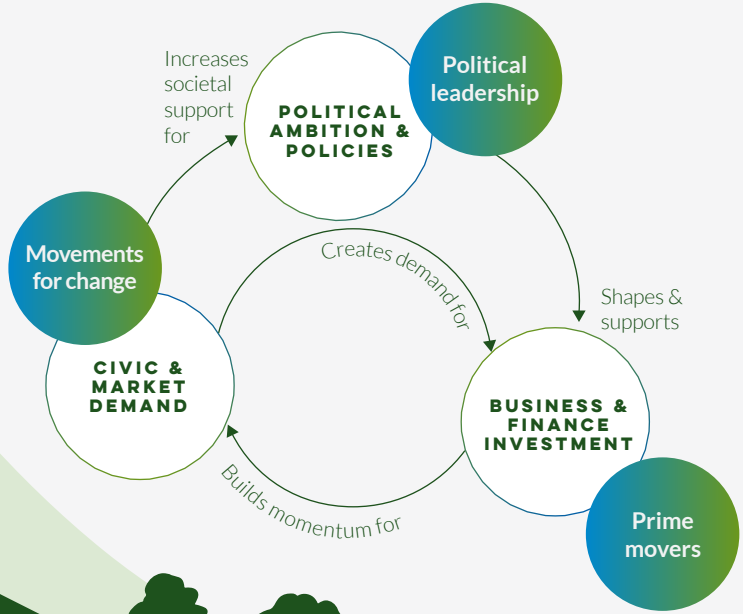
AMBITION LOOPS

SUMMARY

Societal change involves those who govern, those who produce and invest in making things, and all of us as citizens and users. Ambition loops help us explore how we all come together to create and sustain bold action, and create rapid, self-reinforcing change.



See: ambitionloop.org

WHEN TO USE IT?

Use with system maps to explore where leadership for change can originate, and how to link up actors in positive reinforcing loops.

BENEFITS - HOW DOES THIS HELP?

- Encourages reinforcing action towards change amongst all the actors in society
- Draws attention to understanding policy as a dynamic, systemic, process which changes the landscape
- Develops approaches for collaboration that can move the whole system to exponential improvements and tipping points
- Supports the use of the Accelerating Transitions Framework

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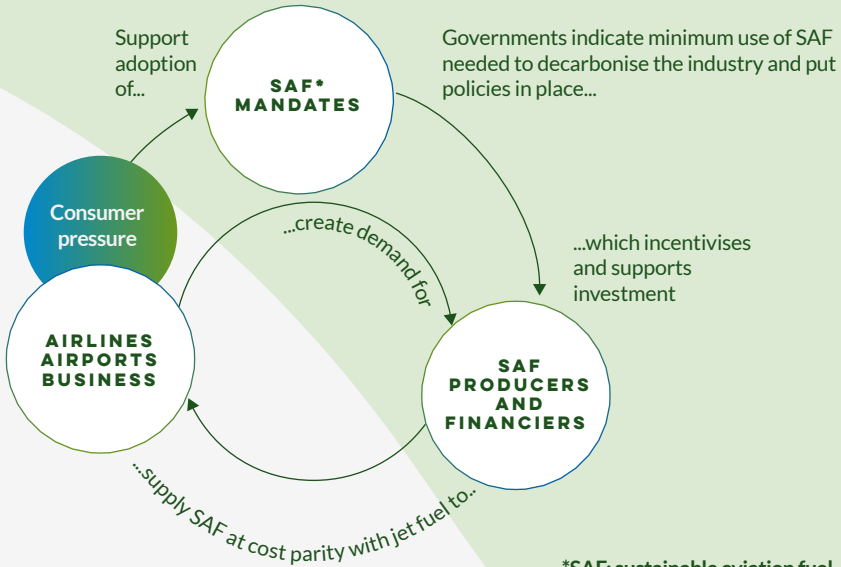
EXAMPLE: AVIATION

Aviation accounts for around 1.5% of global greenhouse gas emissions, growing about 4% per year.

Decarbonisation solutions, such as batteries for short haul and synthetic fuels for long haul, are still in the emergence stage and face cost/ performance adoption barriers. They need coordinated action amongst all system actors to create niches where they can get onto their S-curves of improvement.

This is a sketch of how ambition loops can be developed within an overall system map.

Climate Action Pathway, Transport, Vision & Summary, 2021



*SAF: sustainable aviation fuel

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10

THE POWER OF CONVENING

SUMMARY

Expert teams with the best frameworks may still experience blockers and breakdowns if they haven't considered how to bring together stakeholders thoughtfully. Convening diverse groups enables divergent perspectives to be heard, creating the space for shared problem solving and action.

WHEN TO USE IT?

To bring together a group (of any size) to address your chosen topic. From a meeting to a full-scale strategy process, thinking through who is in your process and how you bring them together is key.

BENEFITS - HOW DOES THIS HELP?

- It reminds us to turn up as whole people (with all the concerns we carry) and to recognise the same in others
- Treats your area of concern as a human system, with all the usual dynamics of collaboration, competition and power
- Ensures all appropriate voices are included
- Gets people involved in your process in an engaged way that sparks radical collaboration

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10 PRINCIPLES FOR CONVENING

10

1. Urgency and ambition
Catalytic events that drive outcomes towards a 1.5 degree net-zero, resilient world ASAP.

2. Impact-focused
Evidence-based, action-oriented, and building a lasting legacy towards COP27 and beyond.

3. Radical collaboration
Balancing deep listening to diverse perspectives, with driving convergence towards shared goals.

4. Diversity and inclusion
Raising the bar on what this means, and demonstrating how it contributes to better outcomes.

5. Human
Inspiring solidarity through meaningful, interactive formats that spark creativity, shared learning and collective problem solving.

6. Digital
Harnessing the best of technology to showcase innovative solutions, and broaden reach and inclusion.

7. Systems leadership
Actors across sectors achieving exponential progress together on mitigation and resilience.

8. Ambition loop
Showcasing the positive feedback loop between business leadership and bold government policy through active participation and co-creation.

9. Amplify science and indigenous knowledge
Drawing on diverse and proven sources of climate information to chart the way forward.

10. Disrupters/Incumbents
Holding a generous space for disrupters and incumbents that inspires constructive challenge, shared learning and collective action.

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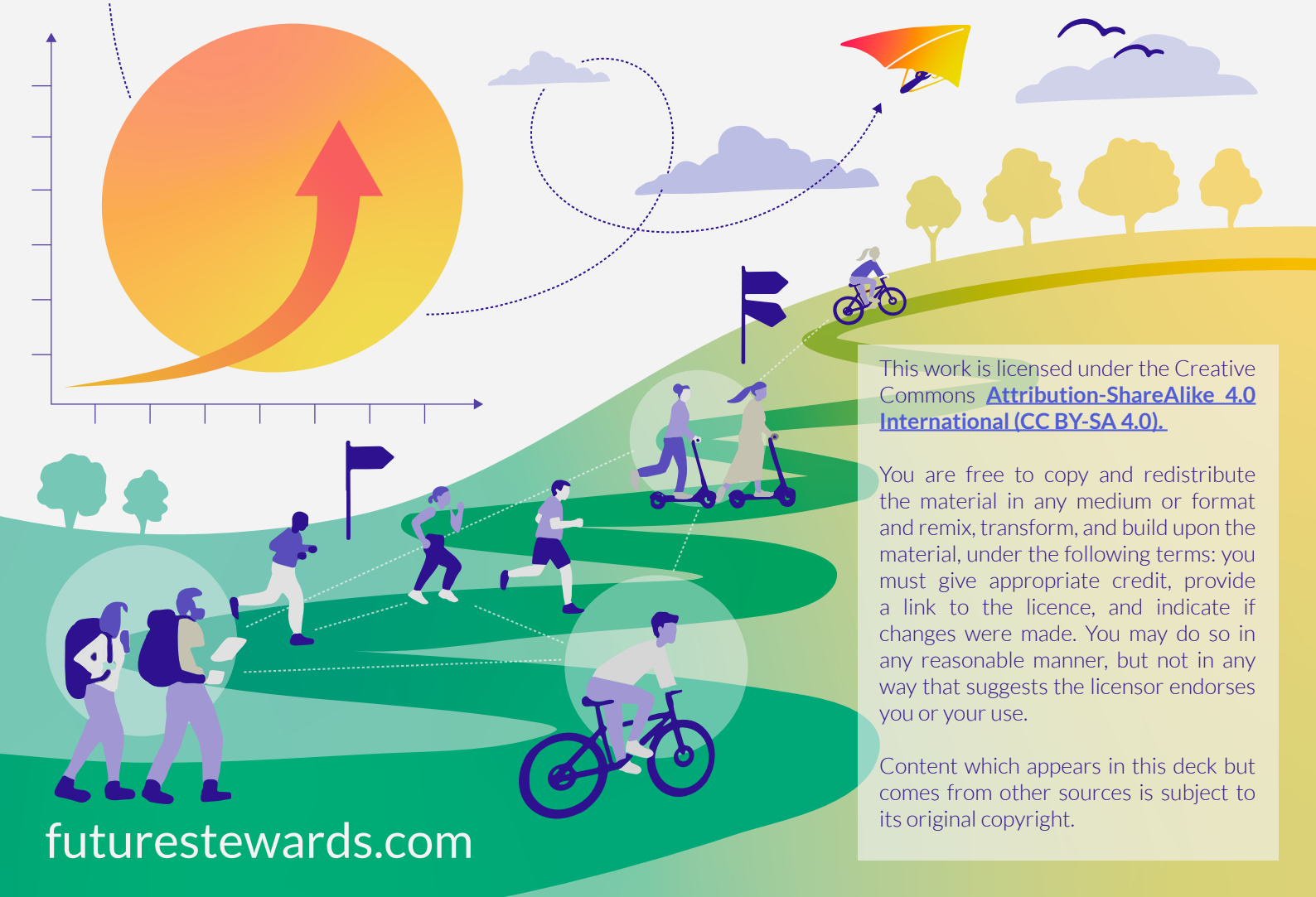

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