Conference Proceedings

BEHAVE 2025

the 8th European Conference on Behaviour Change and Energy Efficiency

European Energy Network
A voluntary network of European energy agencies

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Behave 2025 8th European Conference on Behaviour and Energy Efficiency

2 Foreword to the Proceedings of the Behave 2025 conference

Sylvain Waserman, Chairman - ADEME, French Agency for Ecological Transition

Dear readers,

It is my great privilege to introduce you to the official Proceedings of the 8th Behave Conference of the European Energy Network (EnR) and to present to you this collection of high-quality extended abstracts. As Chairman of the French Agency for Ecological Transition (ADEME), I am proud that we had the opportunity to host this edition in Paris, France. Behave is the flagship event of the EnR Network bringing together around 400 participants from across Europe and beyond demonstrating the relevance and importance of the Network's work.

To adapt to the inevitable consequences of climate change and to limit its already tangible effects, changes in our lifestyles and in the collective organisation of our society are necessary, beyond purely technical innovations. This is why we decided to broaden the scope of Behave: from energy efficiency to sufficiency, and from behaviour change to broaden lifestyles changes, which are essential to ensuring a just and inclusive transition to carbon neutrality. It is important to promote the social, technical, economic and institutional conditions that will facilitate the adoption of more moderate lifestyles and make them more desirable and accessible.

Rethinking our production and consumption models is a sine qua non condition for the transition ahead, and sufficiency offers a concrete pathway to achieve it, as a strategic lever for economic sovereignty and resilience. Sufficiency seeks to meet individual and collective needs while reducing pressure on resources, biodiversity, greenhouse gas emissions, as well as our dependence on raw materials. In doing so, it strengthens the sovereignty and long-term resilience of territories.

There is far more to gain than to lose from climate action in France, Europe and across the world. The concept of a 'just transition', enshrined in the preamble to the Paris Agreement, reflects this reality. The priority now is to ensure that the transition actually takes place, as this is a major public interest objective, one that will ultimately determine all others. Nevertheless, the transition may also entail negative effects on the profitability and viability of certain economic activities, as well as on living standards and social inclusion. Research in the social sciences and humanities is essential to properly assess these impacts, understand how to reduce or mitigate them, and place them in perspective alongside the many co-benefits generated by the transition.

We aim to continue the dialogue on these issues at the 8th edition of the Behave conference. Scientific knowledge, an essential source of reliable expertise, is more necessary than ever in a democracy to inform public debate and to design and implement policies that are effective, efficient and aligned with the needs of citizens, public authorities, economic actors, and civil society. Exchanges between the research community and practitioners can offer valuable insights for shaping and delivering effective policies.

Since 2009, Behave has successfully brought together researchers and decision-makers from politics and business to share innovative solutions and make progress together. Behave 2025 will once again provide an opportunity to continue this exchange. I wish you an insightful reading of these proceedings and a productive conference!

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Reinventing our Ways of Life. From Awareness to Collective Action – Experimentation of New Indicators for Diverse and Just Sufficiency - Efficiency-Decarbonization Trajectories for the Well-Being of All

Theme 2, sub-topic 2a) 2b) 2c) 2d) Theme 5, sub-topic 5d)

☐ "Academic contribution"

☒ "Policy/practice contribution"

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Keywords: sufficiency, efficiency, alternative economic indicators, well-being, SPIRAL, Gaïa VL equation

Extended abstract

For many citizens, elected representatives, civil servants and social partners of local social economy organizations [1], making progress in the transition through a commensurate lifestyle change is like venturing into the fog. Starting with a transition topic raises many other issues, because the crisis is multifaceted. Searching for best practices requires choosing the right indicators beforehand. What's more, most data is either inaccessible or not adapted enough their specific questions, which limits their knowledge of potential options and their understanding of the impact of these choices. There is a lack of simple visuals and integrative indicators to facilitate diagnosis and planning.

Furthermore, debates about greenwashing, fears surrounding degrowth in relation to GDP (Growth Domestic Product) and scapegoating muddy the waters. This lack of visibility generates more anxiety and withdrawal than commitment.

More and more energy specialists are stressing the importance of the sufficiency trajectory topic, which involves lifestyle changes to reduce energy demand and carbon emissions.

Sufficiency trajectories for France have been conceptualized since 2001 in the work of the négaWatt association, and their importance is now being debated at a European scale with the Clever scenario [2], as well as in the IPCC's sixth report (2022). Since the Stieglitz-Sen-Fitoussi report[17], a growing number of economists have agreed on the need for alternative indicators to GDP, to take account of ecological and social issues and the well-being of populations [3]. More recently, studies on the co-benefits of sufficiency and good living are developing, notably in France under the impetus of the ADEME Transition Agency [4].

Bearing this in mind, the authors a group of stakeholders, international networks and researchers, has set itself the following objective: to develop a tool that can visualize and share the current situation, and encourage desirable actions by highlighting the convergence between sufficiency - efficiency trajectories and good living together. The aim is to stimulate the interest of citizens and local authorities in collaborating to implement the energy, ecological and social transition at a local level. This presentation outlines this approach and how it is experimented in several pilot territories in Portugal, France and Cape Verde, as well as providing initial feedback, prospects and outstanding questions.

1 The measurement of the three footprints

In 2022-2024, we adapted a macroeconomic tool used for climate conferences to address human needs, incorporating the Doughnut theory[18] and transforming it into educational and entertaining activities.

1a- New measurement equation (fig.1): Using the Gaïa VL equation[19] instead of the Kaya equation[20] means that needs such as food and housing can be measured in physical units rather than monetary values. This makes it easier to understand real needs and environmental impacts. This highlights and prioritizes the three trajectories: sufficiency first, energy efficiency second, and decarbonization third.

[17] https://fr.wikipedia.org/wiki/Commission_Stiglitz

[18] https://en.wikipedia.org/wiki/Doughnut_(economic_model)

[19]https://www.renoveco.org/equation-de-gaia

[20] https://en.wikipedia.org/wiki/Kaya_identity

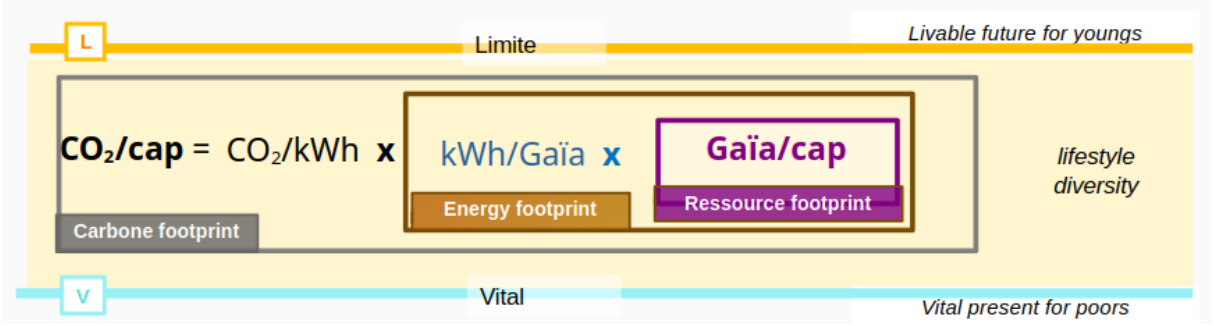


Fig 25: Gaïa VL equation, Gaïa stand for m² in housing, km in mobility ...etc. Sufficiency = decreasing Gaïa par cap, efficiency = decreasing kWh/Gaïa, decarbonization= decreasing CO2/kWh

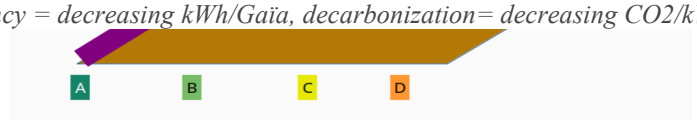


Fig 26: The three dimensions of the Gaia equation. In ordinate, the Gaïa. In abscissa, the performance with energy labels. In height the carbon intensity

1b- Visual data representation (fig.2): The use of three spatial dimensions to represent the equation enables a clear and intuitive visualization of the data. For each need, goods consumed are represented by segments on an axis (purple), the energy required to produce them by surfaces (brown), and CO2 emitted by volumes (grey).

1c- Lifestyle in relief map (fig3): Creating a standardized 'lifestyle metric' (table1) enables the lifestyles of individuals or groups to be represented in a comparable way. This facilitates the compilation, comparison and monitoring of the effects of planned actions. 1 Gaia = 1 cm, 1,000 kWh = 1 cm², 0.25 t CO_2 = 1 cm³.

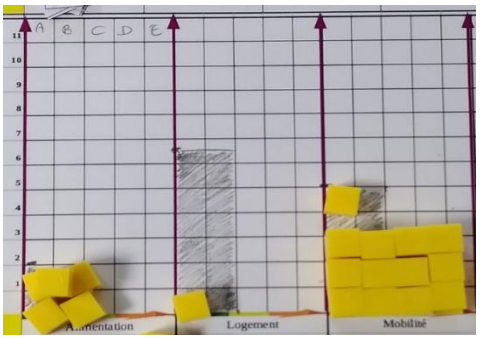


Fig 3: Lifestylemetric of 3 needs in relief map

Table 1: standardization of the needs footprints of an average family in France in cm, cm² et cm³

Needs	Quantity	Segment cm	kWh	square cm²	T CO2	Cubes cm³
Food	1,1 x Vital + 20 %	**3,6**	10 000	**10**	6,25	**25**
Housing	90 m²	**6**	15 000 + 3000	**18**	6	**24**
Travelling	32 500 km	**6,5**	17 000	**17**	7,5	**30**
Equipment	1,7 x vital	**4,8**	16 000	**16**	4	**16**
Collective services	*not defined*				3,5	**14**
Total family	No possible cumulating		61 000	**61**	27,25	**109**
Per person (/2,7)			22 500	**22**	10	**40**

Meat 4 times a week dairy 6 x per week and 20% waste/ consumption 2400 kWh electricity and 10,000 kWh gas per year + 3000 kWh gray energy/ one car 11,000 km per year (5000 km alone and 6000 km with the family), Train with the family 800 km per year, Plane every 5 years long haul and once a year short haul

2 The local knowledge-building process

In 2025, we tested the extension of the SPIRAL[21] approach to 'co-responsibility for well-being', developed by the Council of Europe, to ecological and social issues with the pilot sites in Odemira, São Lourenço (Cap-Vert), and Grenoble.

2a- CO2 emissions cap: Setting a CO2 emissions cap of 5 tons per person per year by 2025, with a gradual reduction to 2 tons per person per year by 2050, provides a clear and measurable target for emissions reduction efforts.

Fig 4: Session Grenoble École de Management janvier 2025

2b- Confrontation and Collaboration Sessions: The organization of confrontation sessions between neighbors (or collectives) to find solutions of trajectories together to reduce CO2 emissions encourages individual commitment and cooperation. These sessions help to co-define for each need a Vital (the minimum that would be fair to guarantee to each person in the territory), and a Limit (a ceiling considered harmful for the future).

[21] https://wikispiral.org/tiki-index.php?page=La+méthode+SPIRAL

2c- Game of well-being together (fig4): To facilitate its implementation, the approach is presented as a collective game. In 2025, it was experimented in pilot areas within neighborhood groups, schools, and associations; the first social development “facilitators” were trained. Their resulting collective action combine the variety of resources (time, money, carbon savings, skills, movable or immovable assets, etc.) arising from their diversity of social, professional, family and lifestyle situations, as well as age.

2d- Co-measuring the effects on well-being with SPIRAL [5]. By relying on the achievements of the SPIRAL method, participants identify their own individual and collective well-being criteria. They then discover how the approach and resulting actions meet these criteria, notably by reducing or even eliminating feelings and situations of ill-being, such as isolation, loss of meaning and anxiety about the future, guilt, etc...

3 Outlook

In 2026, it will be extended to other pilot territories on other continents in order to fine-tune and to assess its genericity. And it will be tested at other territorial scale

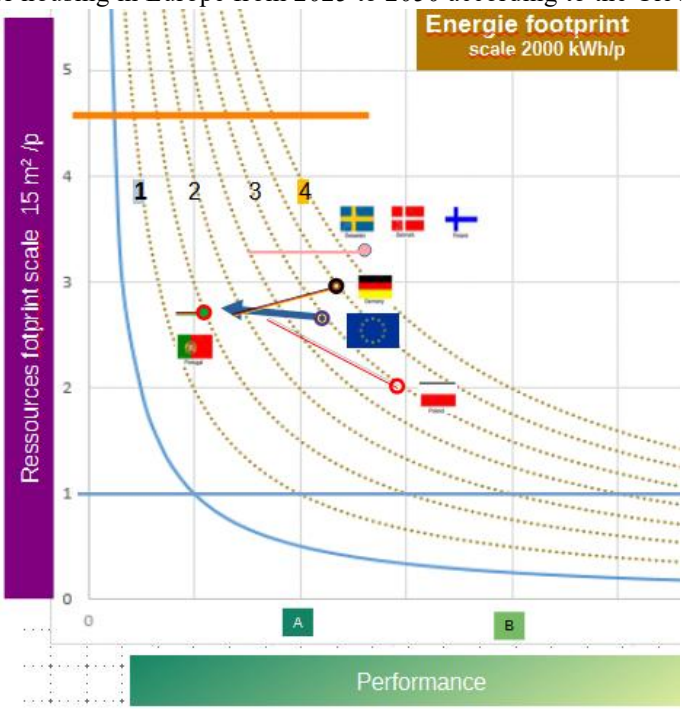
3a- Co-production of territorial data: Co-participation, by incorporating the knowledge and data of transition agencies, (external viewpoints) and citizen knowledge (internal viewpoints), produces fine-grained territorial data enabling a better understanding of local situations and the actions required to reduce CO2 emissions and improve well-being [6].

3b- Dialogue between territories: organizing same collaborative confrontation sessions between representatives of neighborhood in the same borough, and then between representatives of these boroughs in the same city (or rural area), enables to exchange best practices, consider political, legal and economic measures, and correct any undesirable side-effects resulting from the actions undertaken.

3c- Co-production of city climate action plans or others (energy, biodiversity, social cohesion, well-being, etc.) through citizen participation and skills-building, with municipal leadership, rather than top-down planning.

3d- Experimenting visual teaching tools at upper territorial levels. To answer the global challenge, and facilitate the transition from indicators and economic rules based on competition to those based on cooperation and peace [7], we will experiment Gaïa VL equation maps in one and two dimensions (fig. 5 6) in order to, put local to global and global to local trajectories into dialogue.

Fig. 5: Trajectories for housing in Europe from 2025 to 2050 according to the Clever scenario – case of Portugal, Germany, Scandinavian countries and Poland



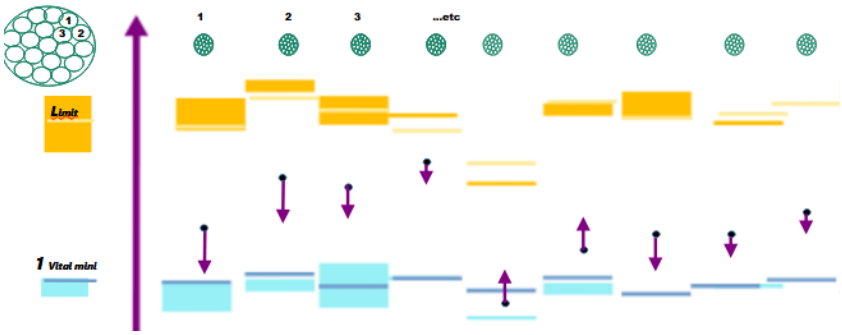


Fig 6 Footprint trajectories between Vital and Limit - comparison between neighboring territories

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European Energy Network (EnR)

The EnR Network is a European network of national energy agencies in charge of national research, development, demonstration and dissemination programmes in the fields of energy efficiency, renewable energies and the fight against climate change.

A network at the forefront of Europe's efforts to improve energy efficiency, increase the use of renewable energies and mitigate the effects of climate change, as part of a just transition approach.
https://enr-network.org/

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The purpose of these conference proceedings is to disseminate the latest research findings of extended abstracts presented at the Behave 2025 conference. The findings, suggestions and conclusions presented in this publication are entirely those of the authors and should not be attributed in any manner to the EnR or ADEME, French Agency for Ecological Transition.

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