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Energy Futures, Environment and Wellbeing

(Partially) concluding remarks

Sergio Ulgiati
Parthenope University of Napoli

Visions and visionaries.

We are facing a period of transition and uncertainty. This calls for more understanding, humility, collaboration and sharing attitudes.

We tried to look into energy and societal future. Future must be imagined, designed and implemented. For this to be possible, we need visions and visionaries, much beyond the present state of the art.

This was the goal of the policy-oriented working groups on energy futures and participatory tools and roadmaps. Results of this exercise have been very exciting. Let me just summarize in the next few slides a selection of concepts from the reports provided by the session chairs.

WG1. Implementing energy efficiency, barriers and solutions. From theory to practice.

✓ The Jevon's paradox and rebound adherents may forget that resources that are saved from gains in efficiency are possibly reallocated in positive directions to either provide additional resources to undeveloped regions of the globe, or they may be invested in alternative productive enterprises that may provide additional benefits to society. In other words, just because resource consumption may "rebound" it is not necessarily a bad thing. It could be a good thing from a sociological and/or energetic perspective

✓ Energy will out. In other words, we cannot save resources.

✓ Efficiency gains are not the end all, as they often may be the result of additional resource expenditures not just energy through put.

✓ Capitalist economics often "trumps" social/energetic potentialities. For instance from an socioenergetic perspective it may make perfect sense to use resources locally thus extending their lifetime of availability by as much as 2 orders of magnitude (ie a NG supply in Alaska being used locally).

WG2. Renewable and nonrenewable energies between growth and de-growth patterns.

The question was about the role of energy in the context of growth/degrowth....but most of the discussion was about growth per se.

Important ideas like the following came up:
- material vs. non-material growth
- distribution/equity/North-South
- are humans hard wired to accumulate? (Tainter thinks likely yes)
- competition/grow or die...here comes China.

De-growth did not appear a wide avenue to energy discussions now. However, asking people to gather around the Table (circular pattern) greatly enhances participation.

WG3. Energy and cleaner production. Innovative designs and technologies.

Great success, for the quality and the remarkable interdisciplinarity of the discussion, which is going to continue after the BIWAES. Several fundamental questions were addressed concerning the role of technology in energy-related problems.

1. **Awareness**. Necessity of framing any technology issue in its correct systemic purpose perspective. Technology for what? Technology for whom? This is strictly related to the presence of even contradictory narratives about technology.

2. **Contextualization.** Technology as a tool acting differently depending on space (local situations vs. global situations), time (present vs. transition vs. future) and purpose (keeping the BAU vs. promoting changes).

3. **Communication.** Necessity to build up a real, correct narrative suitable at different communication levels, even involving humanities scholars. Higher Education-related aspects are expected to be fundamental, too.

WG4. Internet of things and the energy sector in urban and industrial systems.

- **IOT & digital divide**
  - Interfaces and communication to non experts
- **Is IOT of advantage or disadvantage?**
  - Example: dishwasher and PV panels
- **Open data: how to unlock the potential?**
  - Sharing data might be against corporate business
  - Are modularity and upgradability possible (against software and hardware obsolescence)?
- **Can IOT be a facilitator for circular economy?**
- **Business models or administration leverage at city level?**
- **Decision making: empowering the users or "passifying" them?**
  - Different users, different attitudes: shall we educate to complexity or "outsource" the problem to the control units?
  - Data from sensors: usefulness of some data may be discovered in a later time?

WG5. Socio-economic variables in designing local energy policies.

✓ Consumer acceptance is crucial for success. However, high level of complexity for consumers can be a main barrier to application, introduction, and acceptance.

✓ Local conditions will require different ways of implementation (e.g. island solutions or local grid based ones) – which makes it difficult for people to adapt to different systems than they were used to in the past, and than they experience in other locations.

✓ The national legal framework is crucial in setting the conditions, e.g. the right to choose your energy supplier in Germany or the mandatory link to grid based energy supply in Denmark.

✓ The potential of local demand side management are by far not fully understood and exploited.

✓ A balance is needed between enforcement and the individual freedom of choice. Researchers arguing for energy saving, climate change mitigation and air quality should take into account and address local policy processes, based on an analysis what is the domains where local policies are influential (including city-owned companies, shareholding etc.).

WG6. Stakeholders and energy planning.

✓ The transition may not happen or may become a source of new frustrations and conflicts if society is not involved in the planning (be it energy, economy, development).

✓ The increasing role of communication technologies, that we addressed in a special session, may lead to contrasting results. Social media may become a new tool for participatory strategies or may become the tools of Corporations to convert us into faithful customers of consumery goods.

✓ We need to develop participatory tools and strategies to become all important players of decision-making in energy and resource use as well as in societal reorganization (including urban systems, energy networks, circular economy and more).

✓ Involvement of stakeholders is a planned strategy. It will not happen by itself. If stakeholders are left apart, conflicts may arise and be unsolvable.

✓ If the goal is wellbeing and happiness, this does not necessarily imply more or less technology, but instead more involvement, more fulfillment of personal and community needs.

Stakeholders. The identified challenges are:

- how to identify stakeholders and involve them? Specific methods and approaches are required.

- how to engage those stakeholders who do not want to joint a participatory process but are very important to enable changes.

- how to facilitate expression of different perspectives during a participatory process? How to avoid "group think" effect? How to overcome cognitive biases (such as anchoring) that might considerably influence outcomes of a planning process?

- resilience - what to do if boundary conditions change during a planning process (important external factor emerge, shocks)

A few final remarks

Civilizations grow and decline.

The Roman Empire lasted for more than one millennium, then it collapsed because its resource basis was not big enough to support its increased size.

- Was Julius Caesar concerned about this, when his powerful army arrived to Gallia (France) and England, making the Roman Empire larger? Certainly he was not even aware of this problem. Yet the decline arrived and the Empire disappeared.

- The longer pulsing "wave-length" makes it difficult for us to recognize the cycle of which we are part, while recognizing the shorter pulsing cycles of ecosystems.

- Societies, not individuals, not Corporations, must address the problem of the future ahead.

As Odum pointed out, systems (including societies) follow oscillating patterns.

- (1) **growth on abundant available resources**, with sharp increases in a system's population, structure, and assets, based on low-efficiency and high-competition;

- (2) **climax and transition**, when the system reaches the maximum size allowed by the available resources, increases efficiency, develops collaborative competition patterns, and prepares for descent by storing information;

- (3) **descent**, with adaptations to less resources available, a decrease in population and assets, an increase in recycling patterns, and a transmission of information in a way that minimizes losses;

- (4) **low-energy restoration**, with no-growth, consumption smaller than accumulation, and storage of resources for a new cycle ahead.

Policies for sustainability may differ, depending on the phase…

The maximization of the available resource basis to maintain prosperity requires different strategies in different stages of development:

- fast competition in times of growth,

- efficiency and collaboration in times of climax,

- decrease of population and assets in times of descent,

- low-growth attitudes in times of restoration.

The optimistic view

"Make no mistake, this is not a proposal for less growth. It is recognition that general systems principles of energy, matter, and information are operating to force society into a different stage in a long-range cycle."

"Instead of denial, it is time for people at all levels of society to plan for a better world…Coming down doesn't mean going back to ways of the past. In general, descent means new ways."

(Odum, 2001)

Technological improvement

❖ Technological improvement - unless guided by a clear perspective - may not necessarily lead to the desired improvement of quality of life and wellbeing. On the contrary, it might even lead to faster resource depletion, faster environmental degradation, increased social disparity and global instability.

❖ We have explored in depth aspects as energy saving, energy efficiency, rebound effect, growth and de-growth, sustainability, technological innovation, renewability of energy and material resources.

❖ We have agreed that we may need all of these, at appropriate time and spatial scales; and that we need tools to monitor, assess, evaluate; and finally, that we also need radically innovative policies and business models, capable to generate at the same time quality of life, jobs, sustainable communities.

Development.

❖ No need to underline that energy is a crucial development driver. Too many countries still suffer from energy poverty, in the form of insufficient, inadequate, expensive or unequal energy supply.

❖ Although we cannot claim energy to be the solution, the magic bullet to all world problems, we are well aware that there is energy behind water supply, food production, mobility, housing, health, education, communication, democracy.

❖ It is not just a matter of energy supply (e.g. cheap fossil fuels; development of renewable energy sources), but a clear need for a mix of solutions, from energy efficiency to appropriate energy use (matching of use to energy quality), from equal energy access by all social groups to appropriate investments for development of opportunities instead of luxury.

❖ Energy is still one of the causes of political and economic instability and turmoil worldwide as well as of unequal development of local economies.

The role of Science, our role...

"I maintain that the only purpose of science is to ease the hardship of human existence. ...If scientists, intimidated by self-seeking people in power, are content to amass knowledge for the sake of knowledge, then science can become crippled, and your new machines will represent nothing but new means of oppression. ...With time you may discover all that is to be discovered, and your progress will only be a progression away from mankind. ...The gulf between you and them can one day become so great that your cry of jubilation over some new achievement may be answered by a universal cry of horror."

(Life of Galileo, by Bertolt Brecht)

The role of education

❖ Although we do not want to dismiss the role of politicians, policy-makers and administrators, yet we realize that they only look at the next few years ahead. This is likely their task, although some political leaders in the past have been able to look much broader and much ahead.

❖ We, the scientists, may have the important role to design new methods and new ways to address the problems and involve in this search the new generations of students. They are much willing to be part of the process and if we keep them out of the door, they will remain frustrated and deluded and we will miss their motivation, creativity, enthusiam.

❖ Let's make our Universities and research centers the laboratories for the futures, the creative places where a new world design becomes possible.

Well-being

❑ The key word of this 10th edition of the Biennial International Workshop Advances in Energy Studies (BIWAES) was "wellbeing".

❑ While we certainly need energy efficiency and innovative energy technologies and we also need environmentally friendly production and consumption patterns, what we really need is a better way of living, based on better relations among individuals at local, national and international levels as well as better relations between humans and the other species.

❑ Human activities can be either harmful or beneficial both for the environment and for elevating the society. Much depends of our ability to integrate and balance different perspectives, different frameworks and tools, different aims, different cultures.

❑ Only if we strive for a harmonious balance of driving forces, interests and motivations and collaborative networking among societal components at all levels, we will be able to identify new ways for sustainable wellbeing.

Let me conclude with a quote by one of my favorite writers, Arundhati Roy, India:

"*The corporate revolution will collapse if we refuse to buy what they are selling...their ideas, their version of history, their wars, their weapons, their notion of inevitability.*
Remember this: We be many and they be few. They need us more than we need them. Another world is not only possible, she is on her way. On a quiet day, I can hear her breathing."

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Let's meet again at BIWAES 2019