New dogmas for sustainable energy efficiency policy – thinking outside the box

Lene K. Nielsen
Senior Advisor
Danish Energy Agency
Amaliegade 44
DK 1256 Copenhagen K
ln@ens.dk

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Abstract

A huge range of incentives are used to increase energy efficiency and reduce the wasteful consumption of energy.

The measures are taken on local, national and international levels and they comprise all energy-consuming sectors. Normally, measures are chosen from comprehensive studies of saving potentials, costs and benefits, available instruments (normative, economic or informative) and build upon assumptions of rational human behaviour and known technology etc., and the effect of the policy incentives are supposed to be additive.

If climate goals shall be reached in what time there is left, however, there is a need to rethink the energy efficiency planning concept – we need to be 'thinking outside the box'.

This paper will suggest a new set of 'dogmas' for future energy efficiency policy, of which several elements are transferred from disciplines other than energy efficiency research (i.e. psychology, social science, political science etc).

Each dogma will be analysed and explained separately and the intention is to explain how wealth-creation and lifestyles in a modern society in a globalised world can combine these societal challenges to aim for a sustainable energy efficient future.

Some of the key-words for the dogmas are:

Innovation, holistic thinking (supply and consumption), how to afford to be an energy consumer with good conscience, the need for listening, understanding and learning human behaviour, changing from traditional into collaborative planning, democracy and energy efficiency, future lifestyle patterns.

Introduction to the dogma-concept

Dogma is the established belief or doctrine held by a religion, or by extension, by some other group or organisation. It is authoritative and not to be disputed, doubted, or diverged from, by the practitioner or its believers. The term derives from Greek *δόγμα* "that which seems to one, opinion or belief" and that from *δοκέω* (*dokeo*), "to think, to suppose, to imagine". (Wikepedia).

The changing climate- and other ecological problems are serious challenges for the future, and have so far not been satisfactorily addressed.

Of course there are many political reasons for the current situation and several parameters must be taken into consideration in an analysis of the 'climate-battle'.

Recently there has been a theory developed attempting to explain why the actual challenges will not be solved within the structures of the society we have today. The consequences of the present societal structure raise the need for a fundamental reorganisation of those structures. New relationships between individual and society are necessary. This is a basic precondition for a new collective determination to solve global climate challenges. A fundamental change in climate- and energy policy will also influence energy efficiency policy.

Several analyses have been undertaken, ambitious targets been set and lots of regulations have been implemented on climate-, energy- and energy efficiency policy. It is not at all the intention to underestimate all the good efforts and results gained during the last decades. Rather it is to present the context, where a fundamental reform of running energy efficiency policy is possible, so all the ambitious but necessary targets can be reached.

A new set of 'dogmas' for future energy efficiency policy will accompany this development, and they will be build upon rad-

ical change in methodology and assumptions, that efficiency measures traditionally are build upon.

Recently the Danish Climate Commission released their report on a fossil free Denmark. The chair of the Climate Commission Katherine Richardson expressed, that 'It will be quite a revolution to restructure the whole energy system. But it will almost not be more expensive in 2050 than today, and we will not need to live in caves.' (www.bt.dk, 28 sept 2010).

New relationships between individuals and society

The new dogmas for energy efficiency policy are developed on the basic of the recent theories developed by i.e. Scharmer and Rifkin.

Their key message is that traditional capitalism is undergoing radical changes and entering a new stage of interactions between individuals and society, that differs from today's model.

A clear demonstration that the current system has failed is that it has not been possible to obtain sufficient results in the climate negotiations. Individual interests at all levels have not been able to unite towards common goals and policies. This may reflect that the global sense of cohesion is not sufficient.

We are now in the reforming process entering the new 'stage' where capitalism in the globalised welfare states is to be transformed into a new stage which will replace the 'stakeholder-capitalism' that was also are influenced by financial crises.

The 3 stages of capitalism in Scharmer's work (Scharmer, 2009, p.6) are as follows:

- *Capitalism 1.0: The original "free-market" or "laissez-faire" capitalism that has produced phenomenal growth as well as massive negative externalities in the form of poverty, environmental destruction, and periodic currency crises.*

  The societal response to these crises led to …

- *Capitalism 2.0: A more regulated stakeholder capitalism in which the major areas of negative externalities are addressed through social security systems, labour unions, international labor and environmental standards, Federal Reserve banks, etc. All these institutions are designed to do the same thing: limit the "free" markets such that negative externalities are minimised. While the main focus of capitalism 1.0 is on growth, the main focus of capitalism 2.0 is on redistribution in order to sustain society as a whole. The problem with capitalism 2.0 is twofold: one, it never really worked outside the boundaries of the OECD countries. And two, it does not appear to be working to mitigate the current global externalities.*

  Which brings us to our current transformational phase, moving toward …

- *Capitalism 3.0: An (as-yet-unrealised) intentional and inclusive ecosystem economy that upgrades the capacity for collaboration and innovation across all sectors and systems.*

The important point in this context is that each system is based on different stages of attitudes and awareness among its players, and therefore also demands new ways of making policy. According to Scharmer the characteristics of the emerging 3rd stage are:

> In the emerging 3.0 stage of our economy, there is a shift of awareness that extends the natural self-interest of the players to the entire ecosystem. Ecosystem awareness means having the ability to operate with a mind that perceives a problem from all of the perspectives in a given social-ecological system (rather than only from one's own) and to internalise the concerns and issues of the other players in one's own decision-making. This internalisation of the externalities of other stakeholders is already starting to happen in many places today. For example, sustainable supply chain projects, fair trade consumer movements, the local living economy movement, and the movement around slow money and conscious investing are extending their reach from a narrow (personal or corporate) ego-system awareness to an ecosystem awareness that includes all other players in the economic process (value chain). (Scharmer, Seven Acupunkture …, p. 7)

Empathy is the glue for societal changes

There must be an enhanced holistic understanding and this implies a focus on the relationship between the individual and society. It is necessary that the individual must be able to develop more empathy and thereby strengthen the sense of coherence. The road forward is to strengthen the tools that promote human empathy. This will increase the ability to tackle climate change (Bertelsen, 2010).

Jeremy Rifkin is elaborating on the importance of empathy, which he calls the 'social glue for societal changes'

Empathy means that we physiologically have the ability to experience others' situation, mood or feeling. Enhanced emphatic sensibility will thereby strengthen the personal relations between individuals and thus create mutual relations that determine the social and societal mechanisms.

Scharmer and Rifkin are both convinced that we need to move to another level for civilisation – in Rifkin's terminology called the 'Biosphere Economy':

> 'The Third Industrial Revolution and the new era of distributed capitalism allow us to sculpt a new approach to globalisation, this time emphasising continentalisation from the bottom up. Because renewable energies are more or less equally distributed around the world, every region is potentially amply endowed with the power it needs to be relatively self-sufficient and sustainable in its lifestyle, while at the same time interconnected via smart grids to other regions across countries and continents.' (Rifkin, 2010, p.4).[1]

A new stage of civilisation – where empathy is an important driver – will require a new policy concept, also including and affecting energy efficiency.

The following dogmas are inspired by this need for 'rethinking' or, as Scharmer quotes: 'there are many ways of differentiating economic stages. In this case I use the terminology of capitalism 1.0, 2.0, 3.0 suggested by Barnes (2006), because it is simple and it reminds us that we need to do the same thing with

1. It is not an issue in this context to discuss the more conrete energy analyses presented by Rifkin in some of his work. Focus here is on the highting on the need for empathy.

our social and economic institutions that we are used to doing with our computers: *update the operating system.´*(p5)

So what will an updating on the operating system to run better energy efficiency policy imply?

Based on conclusions from the above mentioned authors (Scharmer and Rifkin) some of the keywords for the new energy efficiency dogmas are:

- social and ecological responsibility,
- awareness that extends the natural self-interest of the players to the entire ecosystem,
- ecosystem awareness means having the ability to operate with a mind that perceives a problem from all of the perspectives in a given social-ecological system (rather than only from one's own) and to internalise the concerns and issues of the other players in one's own decision-making,
- empathy,
- a sustainable lifestyle,
- bottom-up policy.

Scharmer has suggested seven acupuncture points for shifting capitalism to create a regenerative ecosystem economy (Scharmer, 2009), and the following dogmas for energy efficiency policy are partly on line with this approach – seeking to highlight the implications for energy efficiency.

The dogmas are not to be understood as the full new set-up of dogmas for future energy efficiency, but are a contribution to the future debate on energy efficiency policy and context.

On the contrary, the intention is to describe the future of dogmas, which are open to development, while empathy and sense of community are important drivers.

The 5 dogmas for future energy efficiency

Dogma 1: Innovative Innovation
Dogma 2: Holistic thinking
Dogma 3: Meet human beings, -and listen
Dogma 4: Meet human beings, -and understand
Dogma 5: Meet human beings, and foster democracy

Dogma 1: Innovative innovation

Green technologies – Cleantech – must be developed and utilised all over the globe. But there is a need to broaden the energy-efficiency innovation concept in a way that not only purely technical solutions are developed.

Communication technology, infrastructure technology and social technology (Scharmer) will be important contributors to future energy efficiency innovations, seen from the assumption that future societies will depend on emphatic interactions.

The rise of the NGO movement for renewable energy is historically built on commitment, emotion, empathy and morality. These movements will have a good basis for a real influence on future energy (efficiency) policy.

Rethinking innovation might also imply that the solutions can meet the human needs, and contribute to solutions that correspond to attitudes and values which normally will mean that solutions also allow individuals to be energy consumers with good conscience and lack of guilt.

Figure 1: Bjarke Ingels from: Yes Is More: An Archicomic on Architectural Evolution (2009).

'Spend less' might maybe be transformed into 'Yes is more'. Yes is more is introduced by the architect/artist/innovator/… Bjarke Ingels (Ingels, 2009).

> The idea is that rather than choosing between opposites, you can try to incorporate opposite extremes … In computer game design they use the term gameplay – that the best computergame is not the one with the most complext storyline, or the most beautiful graphics – or the most infinite environment – or the most monsters – but it is the one where you create the maximum amount of fun with a minimum of means (processing power, loading time etc …) … I'm tempted to say Less is More ;-) (Whata, 2009)

Like Scharmer, Bjarke Ingels also uses a computer reference so besides the need to *upgrade our operation system* we also need to develop according to the same principles as in software programming where complexity is defined as transmitting the *maximum amount of information with a minimal amount of data*.

At the same time the word 'more' should not reflect the ordinary 'welfare economic growth paradigm' but the vision for the future – and an empathically driven - society, that human needs, including energy, are not restricted, but available because the whole context in how to express needs and how satisfy them are radically changed.

Dogma 2: Holistic thinking

The holistic methodology is not a new phenomenon for energy efficiency planners but it also does not characterise the real planning.

'Holistic' can cover several approaches as:

THINKING SUPPLY AND DEMAND TOGETHER

All energy sources could provide several times more than the current energy demand (see Figure 2). The question could be raised why incentives are not prioritized only to catch this potential and why normal citizens should be 'bothered' with messages of 'cutting down' their energy consumption. There are many reasonable answers to these questions, e.ge. the technical/grid and financial limitations, but it is very important to keep an ongoing debate on values and infinite economic growth as well as on limitations and opportunities in the switch between energy consumption and possibly (often decentralised) use of available renewable energy sources.

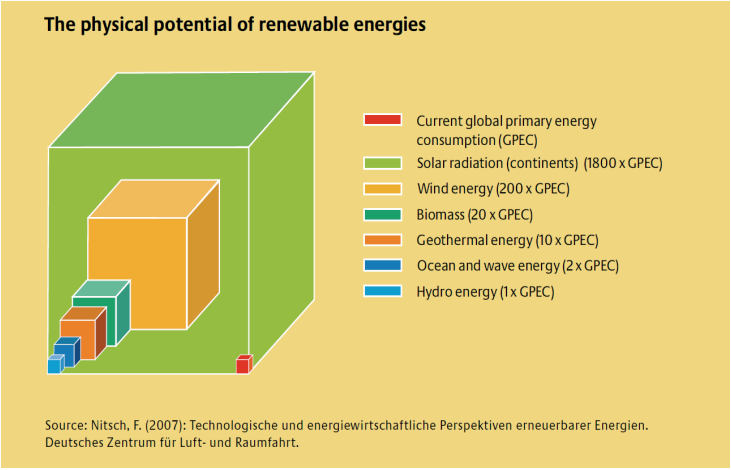

Figure 2: The physical potential of renewable energies.

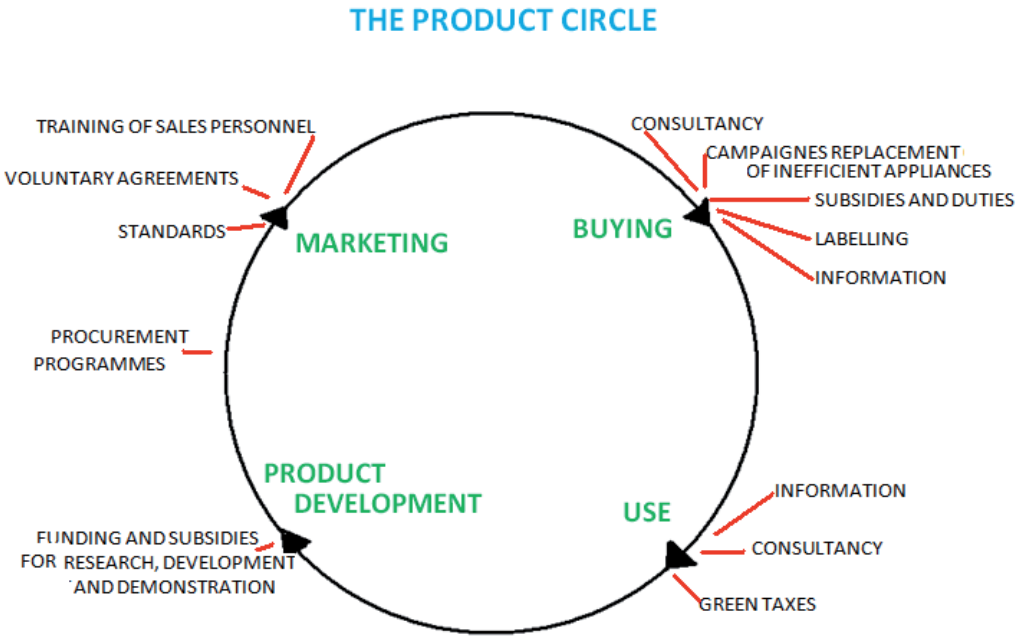

Figure 3: The Product Circle (Nielsen, 2005)

REFLECTING HOW THE GRID CAN CONTRIBUTE TO COMPREHENSIVE SOLUTIONS INCLUDING ENERGY EFFICIENCY

Grid solutions, as 'smart grids' with 'intelligent' operating systems are on the agenda all over the world. Several grid projects are undertaken, and it is obvious, that grid solutions on all levels will contribute to the long-term target of a fossil fuel-free world.

Even if grid projects contribute to fulfil the fossil fuel-free targets many countries have lot of local opposition to grid projects. This resistance is often organised by local groups that one must assume are positive towards the idea of a fossil fuel-free society and the expansion of renewable energy. It points to a democratic leak which is included as the last dogma in this paper.

REFLECTING HOW DIFFERENT MEASURES WORK TOGETHER

The *rational man* thinking that is common in today's energy planning and –policymaking will calculate the expected effect from a measure one by one, and not include the interaction and synergy when measures are planned. Worst case is that an expected effect i.e. by increased prices will not result in reduced consumption, maybe because people do not know about the prices or they do not have the ability to react to them because the actual daily life consequences would be too stressful.

Figure 3 – 'The Product Circle' – illustrates several of the measures that can be undertaken to reduce energy consumption. The different measures are related to different situations in the 'product consumption' circle: Product development, marketing, buying and use. Besides all the possible demand side measures all the other framework conditions in the society – some call them external factors – must be included.

INCLUDING ALL TYPES OF ANCILLARY SAVINGS AND PRODUCTION BENEFITS

A wide range of benefits accompanying energy saving measures, the so-called win-win situations, are often highlighted in the energy efficiency debate.

Operations and Maintenance	Production
Reduced maintenance costs	Reduced product waste
Reduced purchases of ancillary materials	Increased Production
Reduced water consumption	Improved product quality
Lower cooling requirements	Increased production reliability
Reduced labor costs	Shorter process/cycle time
Lower costs of treatment chemicals	
Work Environment	**Environmental**
Increased worker safety	Reduced hazardous waste
Reduced noise levels	Reduced dust emissions
Improved workstation air quality	Reduced waste water output
	Reduced CO, CO_2, NO_x, SO_x emissions
Other	
Achieved rebate/incentive (one-time)	
Reduced/eliminated demand charges	
Reduced/eliminated rental equipment costs	
Avoided/delayed costs (one-time)	

Source: Lung, Robert Bruce et al. 2005, p.4

Figure 4: Types of Ancillary Savings and Production Benefits.

Researchers at LBL explained their study of ancillary savings and production benefits in the evaluation of industrial energy efficiency measures (Lung, Robert Bruce et al. 2005). Their investigation concludes that the costs of conserved energy is less than the cost of energy, and therefore it is more cost-efficient to implement energy efficiency projects than to by more energy.

The different ancillary benefits (industrial sector) are presented in Figure 4.

Although there is now evidence of the very favourable profitability by saving energy in industry - including the many ancillary savings and production benefits - it is still doubtful if these energy saving measures get translated into real business practice changes. In our eyes they seem obvious to implement but historically, experience has proven that even projects in the industry sector with extremely short payback times will not be realised. Other barriers need to be understood.

WHY NOT START BY ASKING: HOW CAN ENERGY EFFICIENCY CONTRIBUTE TO SATISFY TARGETS OR NEEDS FROM ALL AREAS IN THE SOCIETY?

It might be that we need a rethinking of the organisation of energy efficiency. In light of a future society where relationships between individuals and society are changing (empathy, democracy, presence and 'bottom up' are some of the key-words) it would maybe be a better path to follow that the policy and the related measures took their point of departure from the question: How can energy efficiency contribute to satisfy targets or needs from all areas in society?

In that context, energy efficiency would be integrated in all spheres of life and the community and the actual energy savings would be ancillary to the articulated needs from all sectors in the society. More research on this issue would be extremely interesting!

Dogma 3: Meet human beings, and listen

Expert advices and top-down information is normally not sufficient to ensure that measures will be implemented. In addition, a learning process that will ensure ongiong efficiency gains is needed.

Figure 5 (Nielsen, 2005) illustrates the long process of fostering energy efficiency using top-down consultancy:

In most cases where a consultant is involved, the first four steps in Figure 5 are used. Steps 5 and 6 concern implementation (respectively technical-instrumental aspects and cultural-attitudinal aspects). Step 7 involves a learning process for both the consultant and the consumer on the basis of the experience achieved. This is with the purpose of strengthening the consumer's capacity to implement savings in the future. Step 8 signals that the consumer's foundation for using energy more efficiently in the future has been qualitatively improved[2].

Although Figure 5 is aimed at consulting the described process could be applied to other types of advice and consumer information.

Constant dialogue with the consumer combined with an expert's ability to give the right technical advice are key requirements. Of course in real life there will be some differentiation in the need for advisors' or consultants' roles.

In general, the role for advisors, information providers and consultants can be differentiated into 4 categories illustrated in Figure 6 (Poulfelt, 1982 and Nielsen,2005):

'With regard to consultancy within a technical area such as the energy conservation area, the tendency is to place too much emphasis on the consultant role that we normally call the *expert role*. … Due to lack of dialogue and knowledge about the process, the expert consultant cannot contribute to solving implementation problems, as these often concern conditions other than lack of technical information.

The diagnostician aims at getting to the heart of the problem through his/her own observations, gathering of information and analysis, after which a report containing solutions to the problem is prepared. The diagnostician's role can be summed up as one of analysis and observation.

The sparring partner solves the task through close collaboration with the client, and both parties contribute with their expertise and knowledge about the area. The idea is to make room for a positive synergy through deeper involvement. This role is very active; the consultant may be faced with a situation

2. "The term organizational effectiveness is used to imply the ability to adapt future strategy and behaviour to environmental change and to optimize the contribution of the organization's human resources." Turner (1982) p 128.

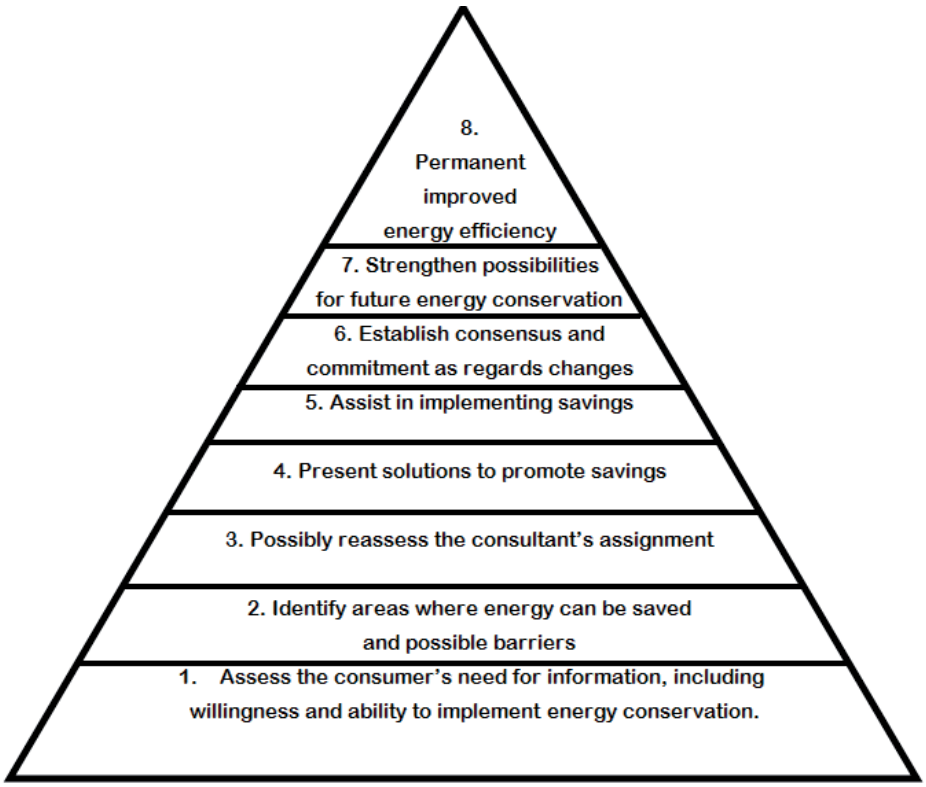

Figure 5: 8 steps of the energy consultancy process.

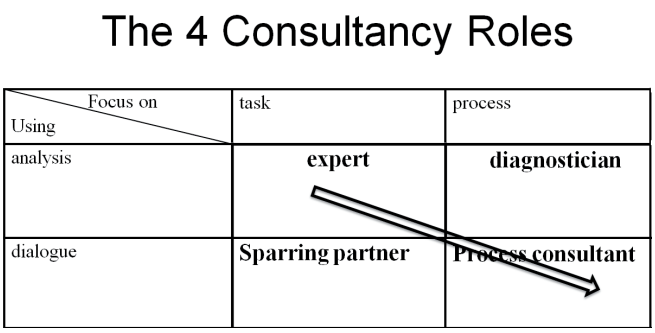

Figure 6: The 4 consultancy role.

involving personal demands, e.g. solving any conflicts that may arise in the process.

The process consultant bases the approach on the philosophy of "help for self-help", and both the client and the consultant have a very active role. The consultant intervenes in processes (social processes, decision-making processes) to much a higher degree than the sparring partner does. The process consultant may unwittingly question established structures and social networks and should therefore for ethical reasons also be very conscious of his/her role.' (Nielsen, 2005).

The 'consultant' shall in this context be understood in a broader context that also includes all the different medias outlets that address the consumer attempting to deliver an energy efficiency message. The traditional expert will belong to the past and is replaced by a new focus on equal dialogue i.e. the process consultant.

Dogma 4: Meet human beings, and understand

The **understanding**, **willingness** and **ability** of consumers to save energy should be the point of departure of any measures for energy efficiency. (This categorization is partly inspired by: Lundquist, 1987, p. 106).

A high level of understanding is present when one has a correct and comprehensive view of opportunities to achieve savings. Ability refers to whether the person in practice is able to change behaviour, so potential savings can be obtained. Willingness relates to whether the person – consciously or unconsciously – is able to prioritise so that savings are actually realised.

It is evident, that all three elements must be included positively and correctly if results shall be reached. A wrong understanding combined with a strong willingness and ability could, for instance, result in catastrophic misunderstandings.

A recent example of incorrect understanding is illustrated in a study from Columbia University:

'Shahzeen Attari of Columbia University and her colleagues used Craigslist, an online marketplace, to recruit 505 volunteers from across America. Each was asked to estimate the energy consumption of nine household devices (such as stereos and air conditioners) as well as the energy savings incurred by six green activities (like swapping incandescent bulbs for fluorescent ones). The researchers then compared the volunteers' estimates with the actual energy requirements or savings in question.

Their results, published in the *Proceedings of the National Academy of Sciences*, suggest that although people do grasp basic energy trends, they are decidedly hazy on the details. On average, participants underestimated both energy use and energy savings by a factor of 2.8—mostly because they undervalued the requirements of large machines like heaters and clothes

dryers. As a result, they failed to recognise the huge energy savings that can come from improving the efficiency of such appliances. (The Economist , August 19th, 2010).

Dogma 5: Meet human beings, and foster democracy

Democracy will be a keystone for the future society.

Conflicts as we see today when e.ge. locally organised movements are opposing energy projects (wind turbines, grid, legislation on energy savings/'control' etc) illustrate to some extend that the inclusion of people must be taken into account.

And more than that: Citizens should be a totally integrated part of the energy efficiency planning process. Much has to be done!

Increased democracy will be accompanying increasing empathy and collective awareness. That is also highlighted in Scharmers '7 Acupuncture Points for Shifting Capitalism to Create a Regenerative Ecosystem Economy':

> The ego-system and stakeholder awareness of the earlier stages would open up to an ecosystem awareness: open-minded, open-hearted, and open-willed behaviours that enhance the health of the ecosystem and serve the well-being of all.[3]

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3. Scharmer, op.cit. p 26.