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# 10 CITIZENS' VISIONS ON SOCIALLY INCLUSIVE BIOENERGY ACTIONS FOR THE IMPLEMENTATION OF THE INTEGRATED EUROPEAN STRATEGIC ENERGY TECHNOLOGY PLAN (SET PLAN)

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# 10 CITIZENS' VISIONS ON SOCIALLY INCLUSIVE BIOENERGY ACTIONS FOR THE IMPLEMENTATION OF THE SET PLAN

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# PROJECT PARTNERS

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| **CSD** – Center for The Study of Democracy, Bulgaria | |

The Citizen Visions on Science, Technology and Innovation (CIVISTI) is a participatory method for identifying new and emerging issues for European Science & Technology.

This catalogue of citizen visions was created during panels with citizens in four European countries (Austria, Sweden, Italy and Bulgaria). Produced visions for the future that were then voted on. The highest ranked visions are displayed in this deliverable.

In each country, around 25 citizens (87 in total) met for a full day workshop where citizens:

- Learned more about the basics of bioenergy;
- Discussed how bioenergy was used in the past and today;
- Discussed how bioenergy can be used in the year 2055, their hopes and concerns related to the future.

The citizen visions were analysed by a multidisciplinary group of experts from the policy-making, research and innovation community, and contributed to a list of policy recommendations necessary to achieve the goals identified in the citizen visions.

**Participants were given the following prompt:**

Imagine you live in the year 2055. You wake up, look out the window, make some coffee or tea, and breakfast, and look out the window. What do you see? How do you imagine the world to be?

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# Austria

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# Active deconstruction for the benefit of biodiversity

- No economic growth is targeted (-> fewer shopping malls, fewer parking spaces)
- The Society organises itself in networked regional associations which form a single unit. Unused areas such as facades of empty buildings, roofs, old pools, old shopping malls can be rented or leased. Pools can be used for algae farming (raw material for food supplements, biomass for energy, soil improvement).
- To be prepared for floods and other extreme weather events and to prevent damage, flow paths are greened and more retention basins are built.

## Benefits

- Reducing soil sealing and improving soil quality and biodiversity
- Expansion and return of common and utilized areas
- New occupational groups are created for the maintenance of utility gardens, facade greening
- Positive influence on the microclimate

## Disadvantages

- Irrigation and maintenance require many resources
- Less shopping space – less economic growth

# Live together and share energy

- Everyone in the community contributes to this diversity and bears responsibility. The active participation of all individuals and social cohesion contribute to the success of this vision. Everyone contributes to the functioning of society with his/her/their individual skills.
- These social small-sized communities consist of individual small units connected by electricity and heating networks. Everyone in the community is involved and responsible. Every household contributes to energy production, using various forms of renewable energy – e. g. some houses have PV systems, some wind turbines, some wood heaters for heat production.

## Benefits

- Independence from big enterprises, guaranteeing energy security through a variety of approaches and strengthening social interaction
- Everyone can contribute their skills and contributes to the functioning of the system – self-efficacy

## Disadvantages

- Less individualism – dependent on community
- Potential conflicts in cohabitation in the community

# Organised sustainability in small communities

- More regulated life and economy; superordinate organisations ensures that the regulations are in terms of sustainability.
- Joint cultivation of farms by several families; regional farming, especially vegetable growing increasingly regional again; significant reduction in livestock.
- Residues from agriculture and forestry are used for bioenergy.
- Strong, reasonable regulatory authority, possibly expert government.

## Benefits

- People know their neighbours, help each other, have understanding for each other
- Healthier food, better for the environment, fresh produce, added value stays in the region
- More stable ecosystems in forests, healthy forest, fewer pests, less fire risks
- Less resource consumption, less waste due to cascading use

## Disadvantages

- Partial restriction of individual freedom by regulation
- Risk of failure due to improper regulation or compromised executors

# Italy

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# Cooperation at the core of the energy transition: the future of bioenergy

- A stronger cooperation between institutions and citizens so that more attention can be given to the recovery of biomass that can be transformed into bioenergy and so that common goals are achieved in this regard.

## Benefits

- Less waste of energy and, consequentially, greater availability of energy resources and raw material
- Benefits for enterprises, local institutions, bioenergy final consumers and citizens

## Disadvantages

- The cost and the process timing of the energy transition can be discouraging
- Communication can be difficult in the process and there could be little willingness of citizens to change their habits

# Energetic agriculture

- Fostering synergies among agriculture, environment and energy.
- Crops dedicated to energy biomass can contribute to sustainable agriculture, recovering marginal lands and restoring biodiversity.
- Local communities contribute to the sustainable development and use of biomass.

## Benefits

- This vision encompasses the cultivation of energy crops recovering marginal lands, with no competition between energy and food production
- This includes less use of agricultural inputs (like pesticides and fertilizers) contributing to improve soil health and biodiversity

## Disadvantages

- This vision could lead to an increase of complexity in managing agricultural systems

# Bulgaria

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# Sustainable bioenergy innovation for a sustainable future: using a wider range of biomass for bioenergy

- The expansion of biomass bioenergy networks. Automation in biomass collection, turning cities into a kind of biomass source. Creation of automated systems for collection of biomass from urban areas, households and industries. E.g. collection machines, etc.
- Legislative and political support. Policies to promote the use of waste from agriculture, forestry and cities. Promote sustainability and innovation through legislative measures.

## Benefits

- Society gets more biomass without limiting and affecting agricultural areas
- Compulsory composting will reduce the volume of discarded waste and at the same time generate a new resource
- It will help depleted soils to recover
- Savings on transport costs

## Disadvantages

- Competition with traditional energy sources (Kovachki, large energy producers)
- Danger of agricultural land being used for biomass instead of food (unlikely if only cities are affected)

# Education, science and innovation for sustainable bioenergy

- A systems approach - aligning education, science and innovation, and regional development policies.
- Territorial focus to take into account geographic and climatic characteristics. Decentralisation.
- Digitisation - open access to data for individual territories.
- National policy - regional implementation.
- Specialized staff training for new biotechnologies.

## Benefits

- Qualified personnel, business development, new scientific knowledge
- Public awareness helps the transition to a bioeconomy
- Joint innovation development and technology transfer
- Agricultural and forestry waste is used - conservation of animal biodiversity

## Disadvantages

- Focus on regional development might lead to unequal distribution of resources and opportunities
- A systems approach and decentralization may face resistance from existing bureaucratic structures and established systems

# Sweden

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# More resources for everyone, we share them fairly!

- We share resources and take joint responsibility for water and food to be enough for everyone (as we did during the pandemic where the rich countries developed vaccines).
- The farmers get more responsibilities and rights.
- Biological diversity is well protected.
- We educate the world's population, so they understand the importance of healthy forests, oceans, and biodiversity.

## Benefits

- Less global warming preserves biodiversity and provides better living conditions
- We find a method to distribute water between wet/dry regions
- We don't throw away anything that can be eaten, all resources are used
- The overexploitation of nature ends

## Disadvantages

- Those who are well-off today will have to stand back
- We may not be able to eat, for example, all fruit and vegetables all year round, as we are used to today. We must adapt to the seasons

# Insight 2055 – diversity in height and width

- The increasing demand for crops due to bioenergy production has led to a diverse approach in land use, with regulations ensuring arable land is reserved for food and energy crops.
- Innovations include genetically modified crops for faster growth, cultivation of algae in oceans for bioenergy and food, and alternative farming methods such as hydroponics.
- A shift towards wooden houses and improved bioenergy technology, coupled with local recycling of biomaterials, contributes to more sustainable practices and energy efficiency.

## Benefits

- With good technological development, we can work less and live less stressfully
- Health may also be better because we have a better living environment and are eating a plant-based diet
- There is a sense of belonging which is important for society

## Disadvantages

- Companies will need to change (such as the cement industry, which needs to be reduced)
- There will be an adjustment period, but then we will find new job opportunities

# Impartial AI guiding sustainable bioenergy choices

- Impartial AI tools guide our decisions in the bioenergy landscape, using a simple red, yellow, and green light system to signal the sustainability of bioenergy sources. This decision support fosters informed choices, aligning our energy consumption with environmental goals.
- The transition catalyzes job creation and also enables the cultivation of bioenergy on marginal lands through drone technology, presenting economic opportunities while preserving biodiversity, establishing trust in AI as a cornerstone of our sustainable energy future.

## Benefits

- Empowers individuals and industries to make informed choices
- Industries shifting towards more environmentally friendly practices contribute to a greener economy
- Preserves biodiversity by avoiding disruption to essential ecosystems

## Disadvantages

- May introduce risks such as technical failures, biases in algorithms, and potential loss of human control
- Potential for job displacement in traditional sectors

# Citizens' vision identified themes

independence from big enterprises

materialism becomes limited

not only based on financial interests

No economic growth is targeted

independence from big enterprises

turning away from neoliberalism and unlimited growth

**Satisfied with less**

high-quality products that are long-lasting, reusable and repairable

cities as sources of biomass

reduce resource consumption

recovering marginal land

**circular economy**

less waste

produced and shared on a small scale

**sustainability in small communities**

decentralized and regional

networked regional associations

everyone in the community contributes to this diversity and bears responsibility

collaboration among local communities.

stronger cooperation between institutions and citizens

**Cooperation at the core of the energy transition**

synergies among agriculture, environment and energy.

environmental education

sustainable food education

**awareness through education**

education to promote environmental awareness

political education at school age

educational subject in school "Circular Economy & Energy"

implement civic education

energy is taught as a separate subject in school

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# Identified concerns and hopes

## Concerns

- Degradation of society in the name of profits
- Unequal access to technology and energy
- Deforestation and degradation of nature
- Excessive pollution and consumption
- Entrenched conservative thinking due to national psychology
- Inefficient waste collection and recycling
- Loss of social contact due to very advanced technology

## Hopes

- Better biomass/crops/waste management
- Fostering synergies among agriculture, environment and energy
- Development of efficient (but well regulated) technology
- Nature restoration, forest protection
- Legislative and policy improvements to promote sustainability, innovation and environment protection
- Equal access to energy
- Bioenergy implemented locally, fostering decentralization

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# Country differences in visions for the future of bioenergy

## Austria

- Focus on decentralisation of various processes
- Community development & healthy lifestyle
- Better forestry, agriculture and nature management

## Bulgaria

- Regulatory improvements (laws, regulations, institutions)
- Focus on better integration between private and public actors
- Focus on waste management & education

## Sweden

- Integrating technology within bioenergy solutions
- Creating a multi-functional and adaptable agriculture system
- Fostering an inclusive environment for innovation

## Italy

- Cooperation between institutions
- Circular economy solutions
- Equal and fair distribution of resources

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## Project Partners

BEST Bioenergy and Sustainable Technologies

RISE

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EUREC The Association of European Renewable Energy Research Centres

CSD Center for the Study of Democracy

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