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The viral nature of the spread of technological changes in the modern economy

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Jean Monnet

Definition of viral nature

- The **viral nature** of the spread of technological changes should be considered as the development of transformational processes through the advanced change in the information component of the technological complex (the key principle of its functioning) using methods that simulate the course of viral infection.

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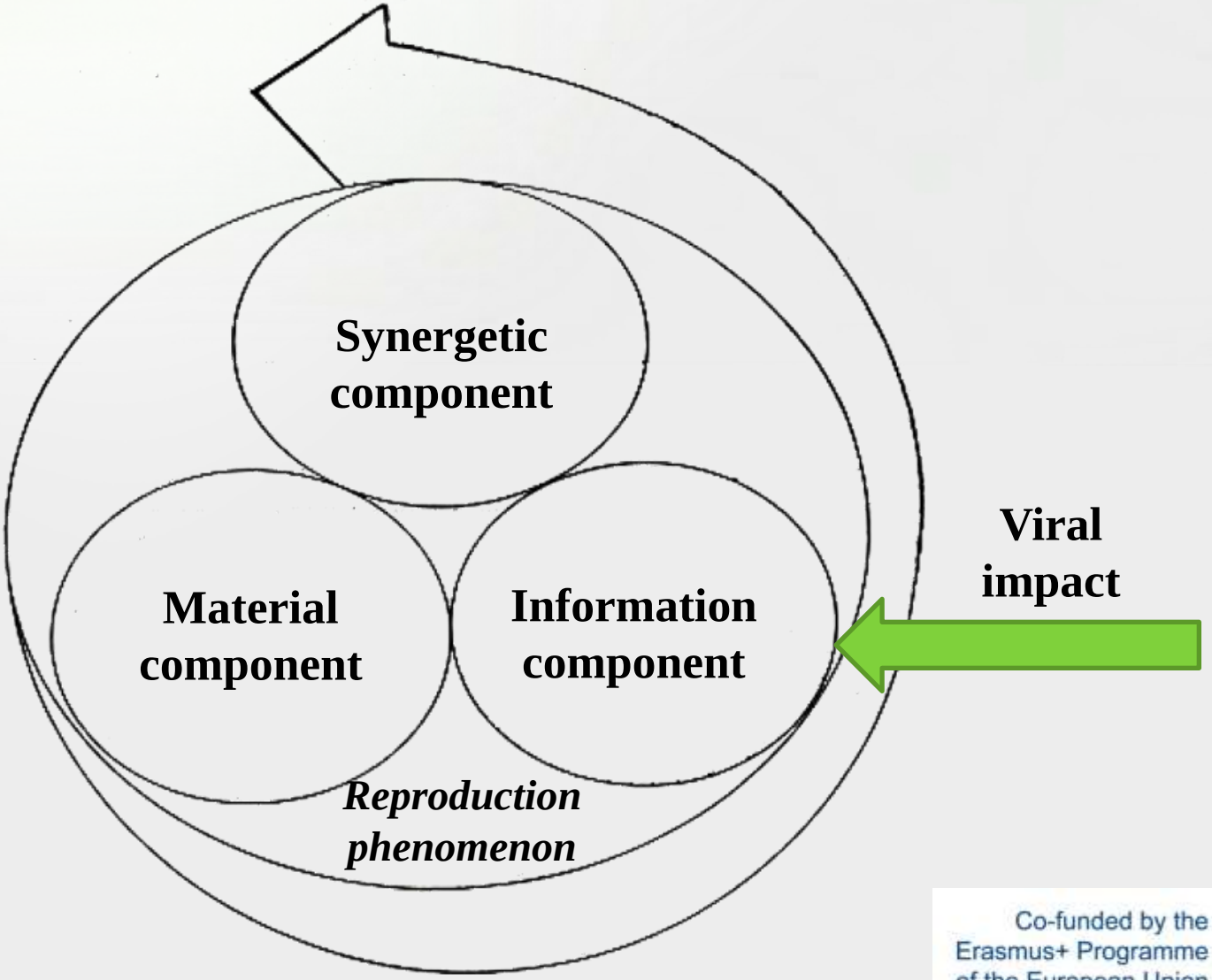
Trialectic mechanism of the technological complex formation



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Peculiarities of the viral spread of technologies

- It is possible to identify a number of peculiarities of technologies viral spread, including those that are similar to viral infection

1) The leading component of technology change is the information, but not the material factor. The new (viral) technology wins not because it is much more efficient (sometimes, many times) that the previous one.

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Peculiarities of the viral spread of technologies

2) The old technology is not able to complete with the new (viral) one – just like the body is not able to counteract the viral at first.
3) The conditionally viral technology clear demonstrates its advantages (economic, social, environmental), which makes it extremely attractive to a wide range of potential users.

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Peculiarities of the viral spread of technologies

4) The viral technology is capable of spreading to a much wider range of users than its old alternative counterpart. In particular, solar and wind generations, as well as 3D-printers, can be used by ordinary private users. While traditional energy and engineering technologies are available only to large industrial manufacturers.

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Peculiarities of the viral spread of technologies

5) The viral technology has significant economic advantages: relatively cheap implementation, low costs of use, which are affordable (relatively with income) for a wide range of users, and a quick payback of invested funds.
6) Informational signals regarding the profitability of the implementation of viral technologies can be transmitted directly between users.

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Peculiarities of the viral spread of technologies

7) A progressive (avalanche-like) character of the spread of viral technologies is observed, when in short periods of time there is a significant (multiple) increase in the intensity of the use of viral technologies (in particular, the number of users).
8) Positive feedback mechanisms of changes in the state of the economic system prevail. The system does not have time to react, balancing the ongoing processes with negative feedback mechanisms

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Examples of viral technologies

- Alternative energy (solar, wind, bio-)
- 3D-printers
- Electric cars
- IT-technology
- Internet of Things
- Smart management systems
- Artificial intelligence
- Virtual and augmented reality
- Claude technologies

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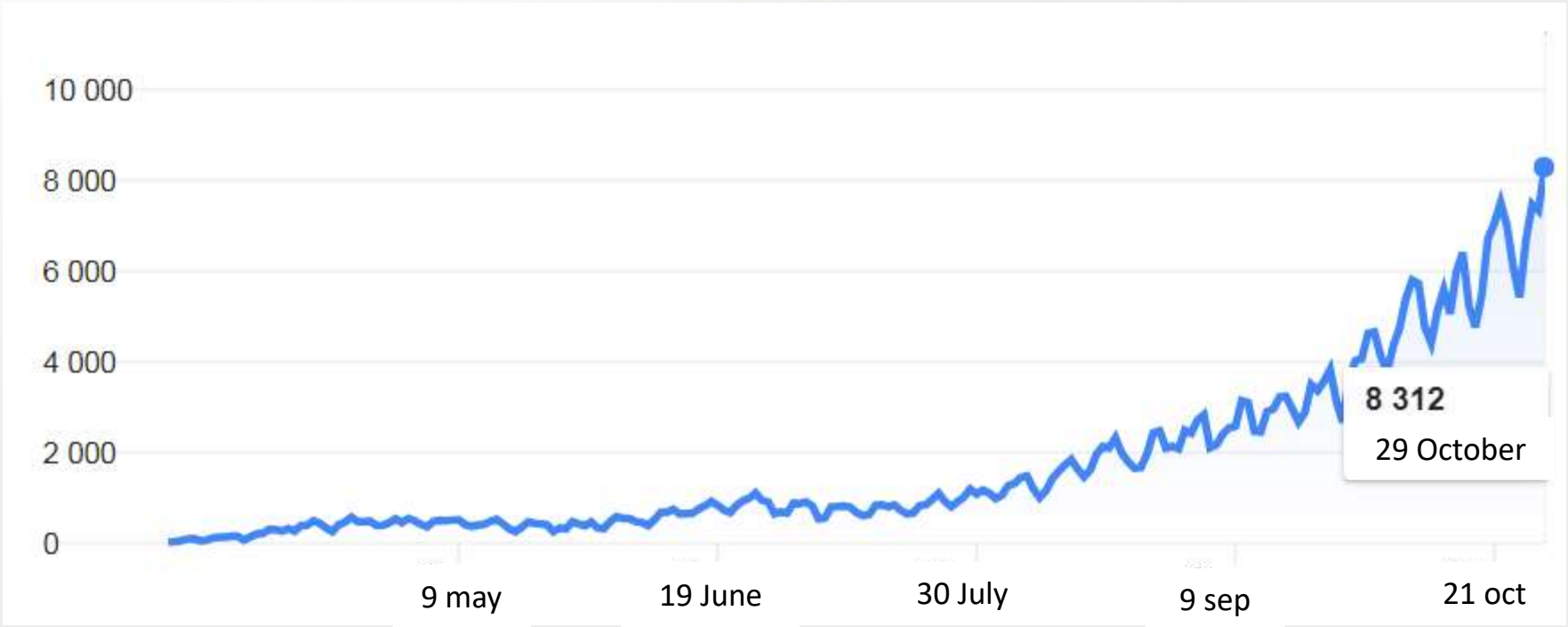
COVID-19 cases in Ukraine



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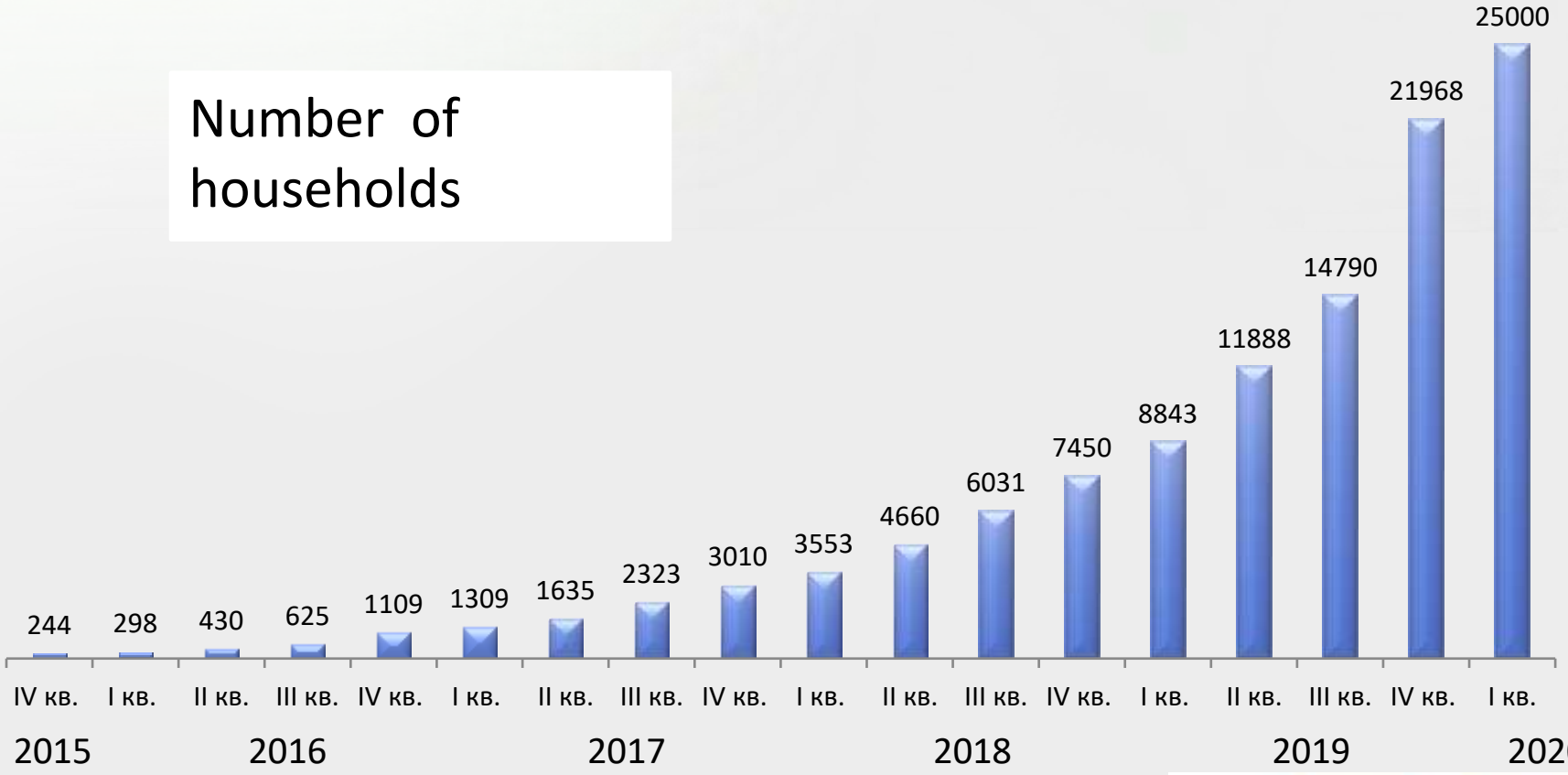
Viral nature of the spread of private SES in Ukraine



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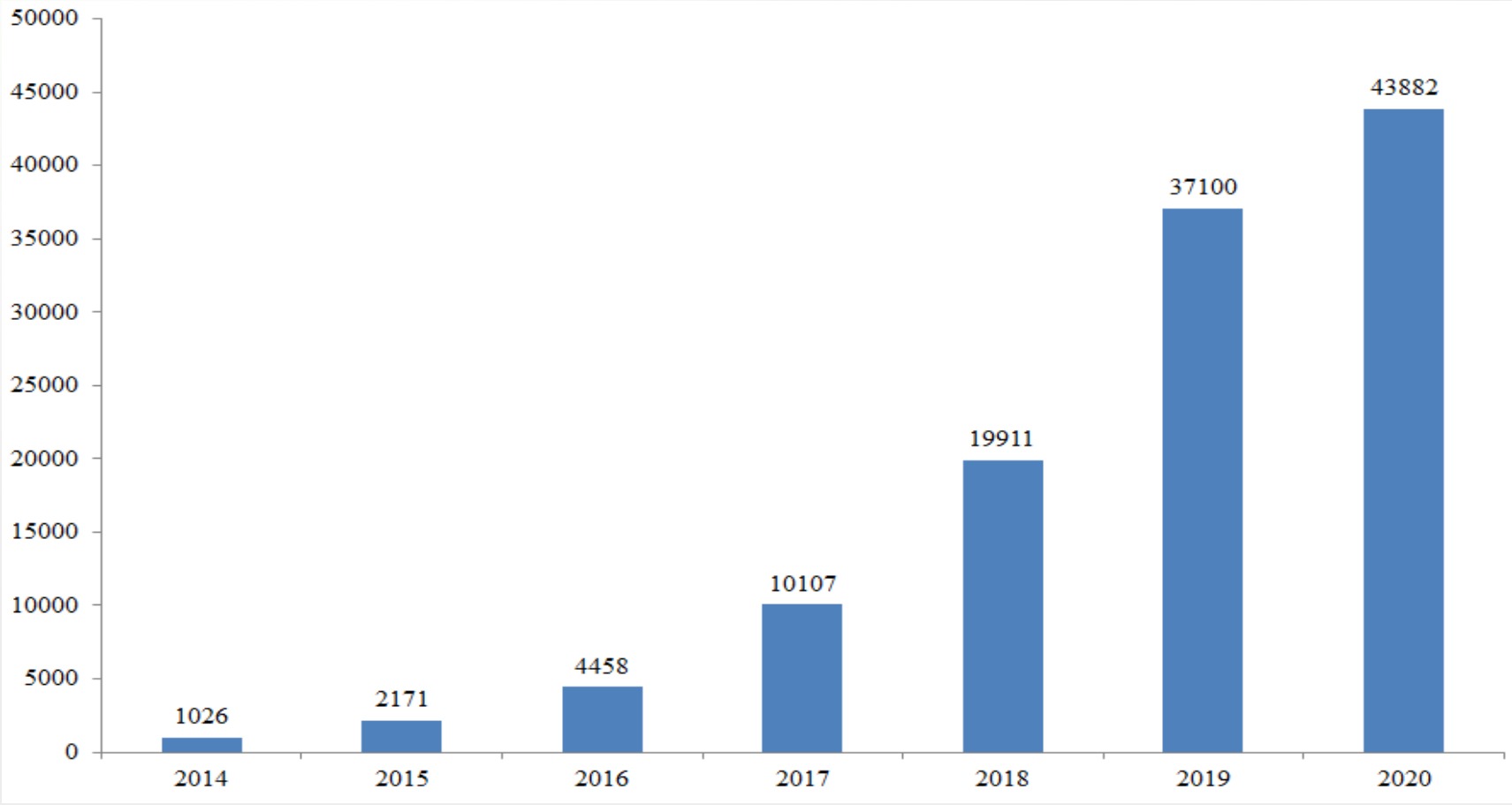
Number of electric cars in Ukraine



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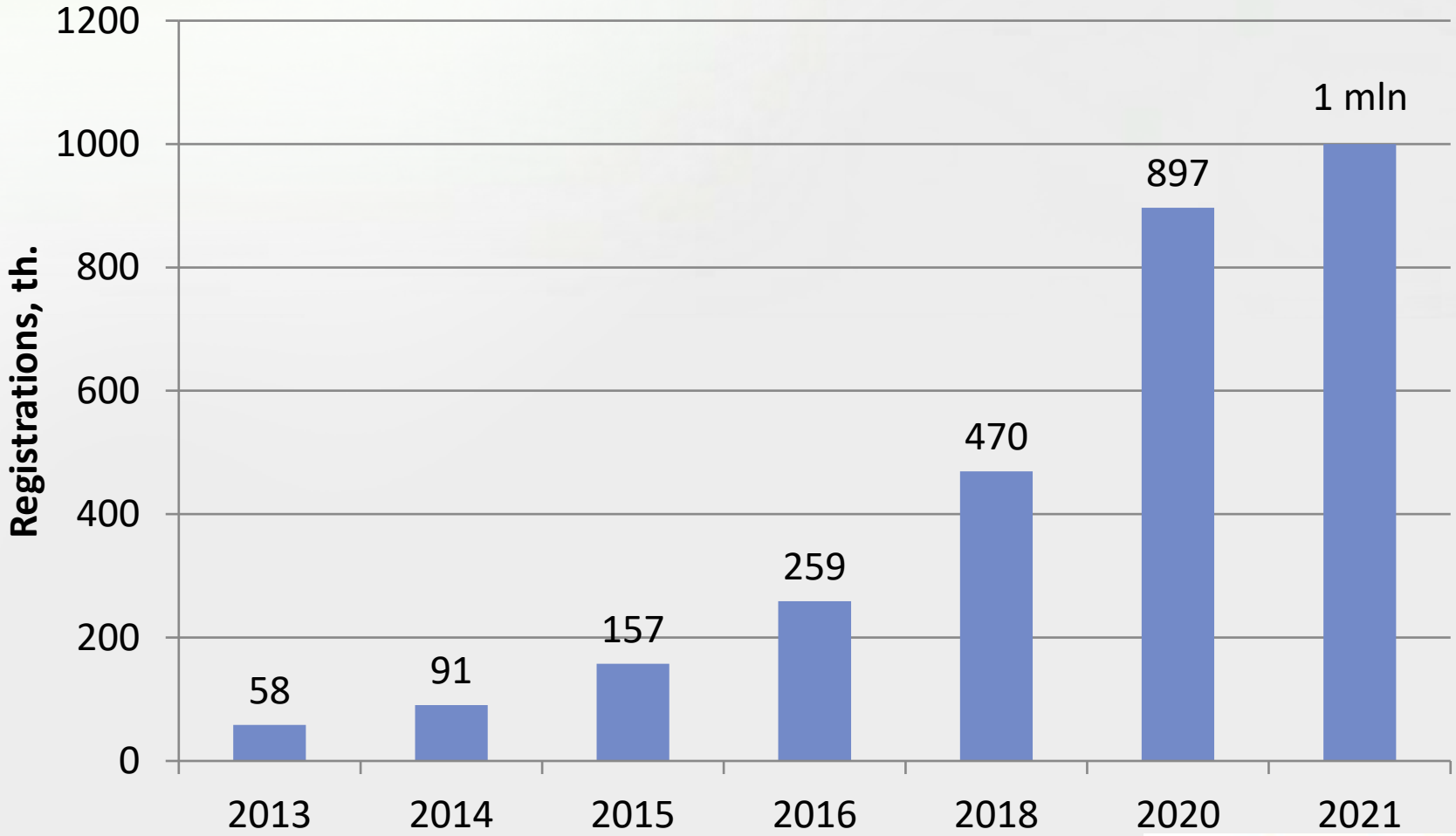
Number of freelancers in Ukraine



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Traffic in Sumy in the beginning XX.

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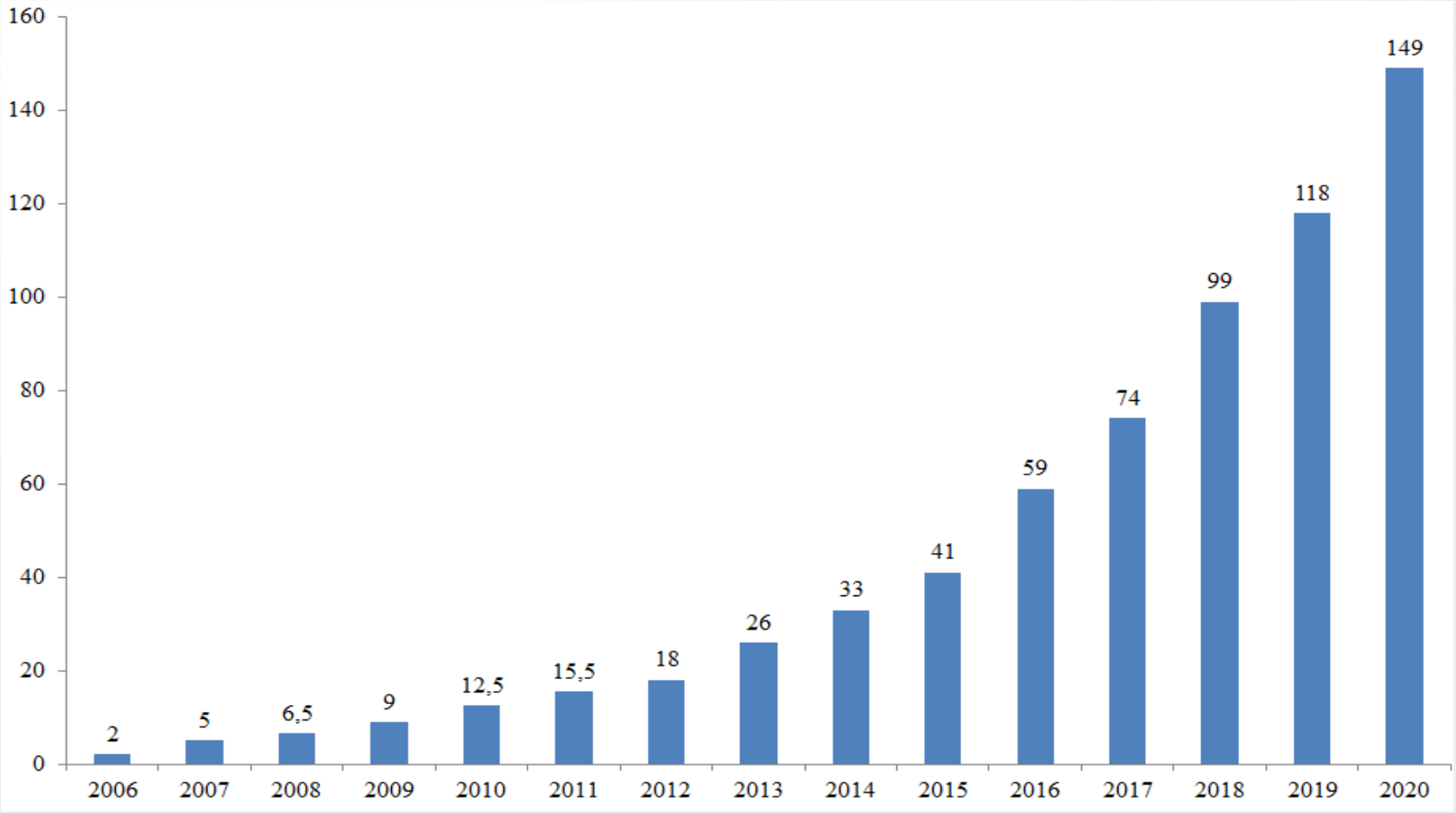
Information production graph



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Dynamics of "green" energy production in the world

Index	Years	
	2010	2020
World production of solar (PV) energy, GW	23	627
Multiplicity of growth, times	-	27
The share of renewable energy (including hydro), %	5	30
Specific cost of solar energy (PV), USD / kWh	0,37	0,06

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Dynamics of "green" energy production in Ukraine

Index	Years	
	2010	2020
The share of renewable energy (including hydro-), %	6	16
The share of renewable energy (without hydro-), %	1	9
Number of privat SES	1	40 000
The capacity of privat SES, MWt	0,02	1 000
Number of electric cars	1	30 000

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The viral nature of changes in the basic factors of civilization over 20 years

Index	Value	
	2000	2020
1. Number of personal computers, million units	140	7500 (about 100% of the population)
2. Number of mobile phones, million units	> 100	7800 (more than 100% of the world's population)
3. Number of Internet users, million units	80	4200 (55% of the world's population)
4. The share of renewable energy,%	1	25
5. Number of 3D-printers, units.	1 (prototype)	More that 2000 additive systems
6. The share of digital information, %	< 50	99
7. The share of information generated by machines, %	10	

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