

MITIGATE THE COSTS OF INFLATION TO SUSTAIN THE COMPETITIVENESS OF THE EUROPEAN SPACE SUPPLY CHAIN

EUROSPACE MANIFESTO FOR AN INCREASED FLEXIBILITY TOWARDS INFLATION

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The issue of rising inflation, partly due to the war in Ukraine and the Covid-19 pandemic impact on rising prices for specific supplies (e.g. electronic components¹), is having an impact on ongoing and future industry contracts (in particular for long projects/programmes), threatening the economic viability of the already fragile European space industry. The rise of inflation is also expected to be a subject of concern for the upcoming CM22, that ESA Member States should actively address.

This paper addresses the situation from the perspective of the European space industry, and promotes the investigation of suitable avenues to mitigate its effects and preserve the sustainability and competitiveness of the European space supply chain, to ensure the same level of speed and ambition in the execution of European space programmes in an inflationary context.

¹ See here e.g. <https://www.fitchratings.com/research/sovereigns/china-covid-19-lockdowns-to-intensify-global-inflation-concerns-10-05-2022>

In a nutshell

The current inflation is expected to generate costs increases within the European space industry at least for the next few years. **For 2023, the impact is expected to be in the order of 500 to 750M€.** This worsening of the situation for the next few years will already be registered at the end of 2022 in the accounts. This is the reason why the **mitigation plan shall be proposed and implemented as soon as end-2022.**

In this regard, two main solutions are being advocated:

- **Review the current status of standard contract clauses to identify inflation compensation measures;** address separately Firm Fixed Price (FFP) contracts and consider Firm Price with Variation (FPV) contracts;
- **Ensuring that budget commitments to programmes are made at constant economic conditions,** providing flexibility to leverage more money in the future to compensate for inflation. This is already the case for ESA optional programmes, but not for mandatory programmes, nor for EU managed programmes.

For ongoing FFP contracts the recommendation is to encourage ESA to use appropriate existing tools:

- Contract Change Notices (CCN): particularly relevant in situation where cost of supplies has risen excessively;
- Revision of applicable hourly rates: hourly rates are usually fixed for a contract with a pluri-annual stable value. Enabling yearly revision would help;
- Introduce FPV contracts for all new slices of ongoing programmes with a proper inflation index, including the revision of FPV clauses.

For future contracts the recommendation is to implement FPV as the general rule for all companies (prime, Core Team and suppliers), with the identification of relevant reference indices to ensure a proper level of compensation.

Open issues:

- Industry has noted that the causes of inflation (or more aptly: the rise of production costs) are very diverse, and do not impact homogeneously all programmes, all companies and all countries:
 - For example, pressure on wages will be felt differently in different countries, rising energy prices will impact more some processes, some specific supplies exhibit very sharp rises in prices (e.g., rare gases, metals).
- The diversity of cases is probably the main challenge to be solved in upcoming negotiations, or the identification of relevant references indices to assess the proper level of cost compensation.

Mitigation schemes

From an industry perspective, two main directions should be taken to mitigate the impact of inflation:

- Devising a mechanism for **indexing contracts on inflation levels (and rising prices on given supplies) to compensate automatically the inflation on future payments** associated to deliveries and contractual milestones;
- Ensuring that ESA has the resources for this, by **indexing Member States contributions** to the ESA Budget to compensate for inflation spending power loss due to inflation.

In both cases, the reference framework/index used to determine the inflation compensation levels is a critical item.

- There is a shared perception in the industry today that the reference values used to assess the inflation and adjust payments and budgets accordingly is not always reflecting the actual costs of inflation registered by industry;
- **More specifically, the application of a single unified index** (i.e., the HICP - Harmonised Index of Consumer Prices) **may not be considered appropriate** to capture, and compensate, the diverse negative impacts of inflation in all cases and for all countries.

The contractual dimension: from FFP to FPV

Several types of development contracts exist in the ESA system:

- Prime contracts in Fixed Price with Variation (FPV) (Core Team) + internal and external equipment suppliers' contracts in FFP;
- Prime contracts in FFP for all companies; For the contracts signed in FFP, an inflation assumption is defined by the contractor in its proposal;²
- Prime contracts in FPV for all companies.

Industry believes that the best solution to address properly the inflation risk in multi-annual contracts is to give systematic preference to FPV (Fixed Price with Variation) contracts rather than FFP (Firm Fixed Price). While FPV would be the preferred approach for all new contracts (or for new contract slices), a solution needs to be found for existing FFP contracts.

With FFP the customer and industry have share the same vision of the future, with stabilised payment milestones and price certainty. This stability has an embedded cost in the form of escalation provision (contingencies and risk provisions). With the current inflation rate the level of contingencies and provisions for risk may become very high and negatively impact the level of performance and achievements in the programme. **On a multi-year basis, the risk mitigation approach of including high contingencies in FFP contracts may have an adverse impact on the customer** in case there is a reduction of the inflation rate originally accounted for. **On the other hand, if the contingencies in FFP are lower than the impact of costs evolution as a result of the inflation, the economic viability of the already fragile European space industry will be further threatened.**

The use of FPV, with an escalation formula and appropriate reference indices, will enable to truthfully reflect the economic conditions associated to the deliveries throughout the whole supply chain. The FPV framework

² And since the current rise of inflation took the World by surprise, no current FFP contract has provisions for inflation rate at 8% or above.

allows managing the risk associated to inflation at the right level without jeopardising the preparation of the future.

Service contracts, being multi annual, are also very affected by hyperinflation and need to be adapted.

ESA Contracts

Ongoing contracts

For all the ongoing FFP contracts, concerning not only the primes but the whole of the supply chain, the European space industry would encourage ESA to:

1. **Open the possibility to negotiate an inflation compensation via Contract Change Notice (CCN) in case the inflation indices go above the proposal assumption (defined at contract level).** A flow down of contractual clauses to ensure the viability of mid- and small-caps companies also shall be foreseen;
2. **Swap to FPV for new slices funded by C-MIN22.**

It is understood that a financial threshold for exercising either 1 or 2 shall be identified. This threshold could be defined for contracts above 20M€ and extending over 3 years - this would cover the subcontractors as well. For contracts below the threshold, an ad hoc approach should be devised based on the duration of the contract, and should aim at ensuring the same level of fairness towards inflationary pressure for lower-funded contracts.

The revision of the subcontractors' formula shall insure a back to back principle when inflation rates are not identical and for all European Member States³.

For the on-going contracts in FPV (prime and Core Team), the European space industry would recommend ESA to evaluate on a yearly basis the actual costs escalation with respect to the indices in the FPV formula. In case the inflation is higher than the indices increase, there should be a possibility to negotiate an inflation compensation.

Future contracts

For future contracts, the European space industry recommends to implement FPV as the general rule for all companies (prime, Core Team and suppliers), while recognising that this might be a significant administrative burden for ESA and industry and that this could be a medium-term measure that would remain as contractual best practice. In order to facilitate its implementation, an automatic and digitalised system could be developed and deployed (e.g., via ESA-star), together with a simplification of ESA calculation methodology.

Industrial bids answering an ESA ITT are to be made in economic conditions of "previous year" or the last firm indexes securing a well-known reference at the time of the bid.

For future contracts in FPV (prime and Core Team), the European space industry recommends to evaluate on a yearly basis the actual costs escalation with respect to the indices in the FPV formula. In case the costs of inflation go higher than the indices increase, we would encourage ESA to consider the possibility to negotiate an inflation compensation (based on the difference between the price forecasted vs. the price revised) if it goes higher than the range of inflation/deflation to be borne by industry as normal part of the business risks.

³ The ESA reference framework *National Price and Salary Statistics in EUROS* (Monthly Publication available from ESA-star) has provisions for differentiated inflation calculations for each country

In addition, industry recommends that ESA reverts to the principle along which “a contract with price variation shall define the factors (such as material prices, labour and social security rates) whose variation shall revise the contract price as well as the variation formula and official indexes to be used for the calculation”. Indeed, a price variation formula shall reflect the cost structure of each specific contract. There is therefore no reason to assume that a minimum of 10% of the total price has to be fixed for any contract as it is the case today.⁴

The European space industry further believes that updating the ESA target price before ESA submits the ITT acquisition plan for proposal would help reflect the updated economic conditions taking into account inflation. Accordingly, updating hourly rates every year according to indices would also be representative of the observed inflation.

Predefined hourly rates

Today’s ESA Hourly rates system based on audited period then extrapolated for the next 3 to 5 years with a flat rate is no longer representative of the observed inflation.

It is therefore proposed to **replace the current ECV /ESA Hourly rates YoY "Fixed" by a variable reference updated every year according to indices.**

C-MIN 22

Inflation and associated risks on future programmes and industry should be at the agenda of C-MIN 22 in order to find solutions at an early stage.

It is understood that the Member States subscription to optional programmes (e.g., Earth Observation, Exploration, Space Safety) will be committed in constant economic conditions in order to be compensated with respect to inflation based on some indices. This mechanism should allow ESA to ensure that it has the required funding to absorb programme cost-overruns caused by the inflation level, provided that the reference index for the determination of constant economic conditions is aligned with actual structure of industrial costs.

Regarding mandatory programmes (Science, Basic technology activities), of key importance for industry, such an inflation compensation mechanism does not exist. The European space industry therefore strongly encourages ESA and its Member States to implement a similar indexing mechanism in order to preserve the purchasing power of mandatory contributions for future programmes and the on-going industry contracts.

EC-funded Contracts

As the inflation in production costs and energy is not limited to ESA contracts, **other institutional contracts (i.e., European Commission (EC) should also be considered to avoid adverse conditions for the European space industries involved in EU programmes.**

It must be recalled that the current Multiannual Financial Framework (MFF) budget has been defined in fixed Euros conditions and current prices have been calculated by applying annually a fixed deflator of 2% to the amounts in 2018 prices. The European Commission’ direct contracts or the full EC programmes delegated to ESA (e.g., Navigation) are therefore defined in FFP conditions. This puts both EC and Industry in a very difficult situation in the face of soaring inflation, as seen already in 2022. Setting up new instruments will take time; therefore, the European space industry strongly encourages the EC to assess and implement an inflation compensating mechanism in the current MFF, and consequently in the on-going and future contracts.

⁴ See ESA GCCs Annex II, 2.2.b

Similarly to the recommendation to include the issue of inflation at the agenda of the upcoming ESA C-MIN (and de facto ESA Member States), EU Member States shall be made aware about the situation and the impact on EU space programmes.

Regarding EC contracts delegated to ESA (e.g., Navigation), the European space industry recommends to implement the same measures as the ones proposed above both for ESA on-going and future contracts.

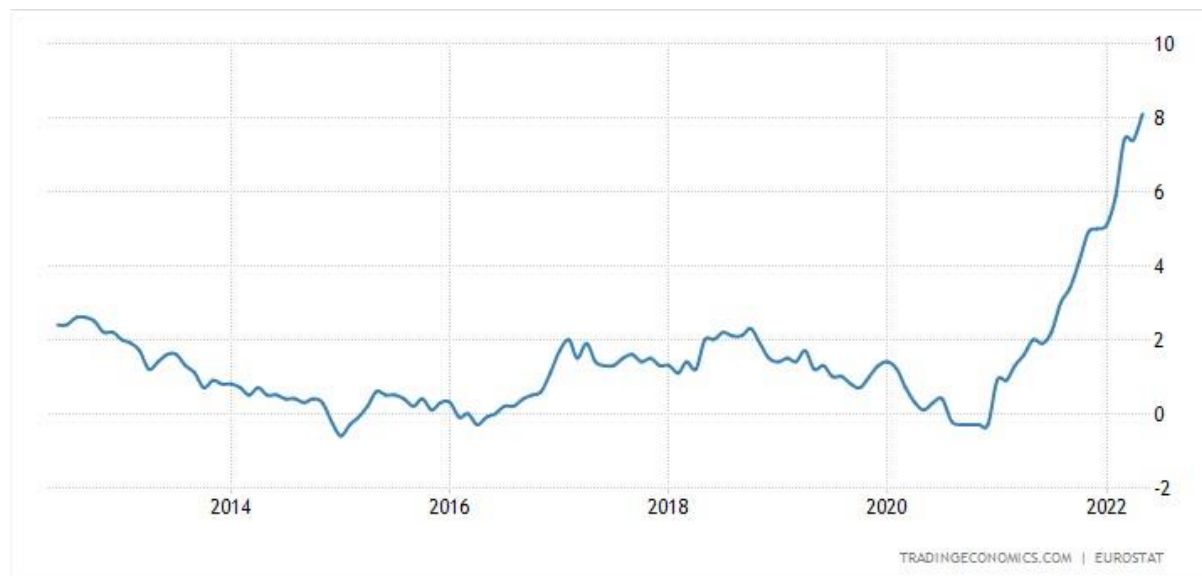
Regarding EC and EUSPA direct contracts (e.g., Navigation, Horizon Europe), the European space industry also recommends to implement the same measures, assuming a compensation mechanism is found at MFF level.

A particular attention should also be paid to on-going Navigation procurements launched by ESA on behalf of EC or EUSPA: the European space industry recommends that EC opens the possibility to include a specific clause in the ITT conditions of tender or in the text of the contract allowing for inflation compensation.

ANNEX: Background - the rise of inflation

Inflationary pressure in Europe has been particularly low in the past decades (with even a few deflation episodes), until the Covid and now the Ukrainian crisis created a major disruption. **Europe is now facing an annual inflation rate nearing 10% overall, with sharply rising prices of energy playing a significant role in the situation**, but not exclusively. Besides, the more structural issue of the shortage of manpower and skills leads to an increase of wages and thus of manpower costs.

Euro area inflation⁵



The inflation level is the result of a variety of factors affecting the price structure. The contribution of each factor to the overall inflation level is shown in the table below:

Euro area annual inflation and its components, %

	Weights (%)	Annual rate							Monthly rate May 22
		2022	May 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	
All-items HICP	1000.0	2.0	5.0	5.1	5.9	7.4	7.4	8.1e	0.8e
All-items excluding:									
> energy	890.7	0.9	2.8	2.5	3.1	3.4	4.1	4.6e	0.7e
> energy, unprocessed food	841.2	0.9	2.7	2.4	2.9	3.2	3.9	4.4e	0.7e
> energy, food, alcohol & tobacco	681.8	1.0	2.6	2.3	2.7	3.0	3.5	3.8e	0.5e
Food, alcohol & tobacco	208.9	0.5	3.2	3.5	4.2	5.0	6.3	7.5e	1.3e
> processed food, alcohol & tobacco	159.4	0.7	2.8	3.0	3.5	4.1	5.4	7.0e	1.6e
> unprocessed food	49.5	0.0	4.7	5.2	6.2	7.8	9.2	9.1e	0.5e
Energy	109.3	13.1	25.9	28.8	32.0	44.3	37.5	39.2e	2.0e
Non-energy industrial goods	265.2	0.7	2.9	2.1	3.1	3.4	3.8	4.2e	0.6e
Services	416.7	1.1	2.4	2.3	2.5	2.7	3.3	3.5e	0.4e

It is interesting to note that the energy indices have dramatically evolved. The trend for the others indices is not already represented in the table and may take time to materialise.

⁵ Source Eurostat via TrendingEconomics <https://tradingeconomics.com/euro-area/inflation-cpi>

It is also most interesting to note that there are strong disparities in inflation between European countries⁶. **In some countries the inflation rate has two digits.**

Inflation rates (%) measured by the HICP

	Annual rate							Monthly rate
	May 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	May 22
Belgium	2.5	6.6	8.5	9.5	9.3	9.3	9.9e	0.8e
Germany	2.4	5.7	5.1	5.5	7.6	7.8	8.7e	1.1e
Estonia	3.2	12.0	11.0	11.6	14.8	19.1	20.1e	1.8e
Ireland	1.9	5.7	5.0	5.7	6.9	7.3	8.2e	1.0e
Greece	-1.2	4.4	5.5	6.3	8.0	9.1	10.7e	1.2e
Spain	2.4	6.6	6.2	7.6	9.8	8.3	8.5e	0.7e
France	1.8	3.4	3.3	4.2	5.1	5.4	5.8e	0.7e
Italy	1.2	4.2	5.1	6.2	6.8	6.3	7.3e	0.9e
Cyprus	1.5	4.8	5.0	5.8	6.2	8.6	8.8e	0.7e
Latvia	2.6	7.9	7.5	8.8	11.5	13.1	16.4e	3.6e
Lithuania	3.5	10.7	12.3	14.0	15.6	16.6	18.5e	2.2e
Luxembourg	4.0	5.4	4.6	7.8	7.9	9.0	9.1e	0.6e
Malta	0.2	2.6	4.1	4.2	4.5	5.4	5.6e	1.5e
Netherlands	2.0	6.4	7.6	7.3	11.7	11.2	10.2e	-0.8e
Austria	3.0	3.8	4.5	5.5	6.6	7.1	8.1e	1.1e
Portugal	0.5	2.8	3.4	4.4	5.5	7.4	8.1e	1.0e
Slovenia	2.2	5.1	6.0	7.0	6.0	7.4	8.7e	2.0e
Slovakia	2.0	5.1	7.7	8.3	9.6	10.9	11.8e	1.5e
Finland	2.3	3.2	4.1	4.4	5.8	5.8	7.1e	1.3e

e estimate Source dataset: [prc_hicp_manr](#)

The problem - rising costs within a fixed price context

Industry is faced with rising prices on production factors. The growing level of inflation affecting western economies is initially driven by 'imported' inflation, i.e. the rise of prices of imported goods directly affecting production costs (materials, components and energy mostly), and indirectly affecting workforce costs with the already existing workforce pressure on remunerations to compensate the loss of spending power (workforce also suffers from imported inflation in the form of energy costs, as well as food and other supplies and thus puts pressure on wages). In addition, the scarcity of resources will have an impact on wages and on costs.

With current multi-annual contracts negotiated as firm fixed price (FFP), and confronted with higher than expected increase⁷ in the price of production factors, the industry risks a major financial degradation while undertaking contract activities in upcoming years, putting at stake the viability of the business.

The actual measure of the impact of inflation is still underway with Eurospace members, but a few elements have already been provided for preliminary analysis. First data gathered suggests that the inflation impact on production costs could lead to 5-10% of costs increase (workforce costs not considered). This average does not recognise the peculiarity of some critical supplies whose demand, in high tension, is driving the prices at unseen levels (such as rare gases like Xe/Kr whose prices are 10x the pre-crisis levels).

These rising prices on supplies will be unevenly spread throughout the supply chain, with energy costs affecting more durably energy-intensive processes and concerned companies, while cost of supplies progressively escalate the whole supply chain. Tension on workforce costs are already impacting industry and have yet to be

⁶ Source: Eurostat - <https://ec.europa.eu/eurostat/documents/2995521/14636256/2-31052022-AP-EN.pdf/3ba84e21-80e6-fc2f-6354-2b83b1ec5d35#:~:text=Euro%20area%20annual%20inflation%20is,office%20of%20the%20European%20Union.>

⁷ The growth of production factor prices vastly exceeds the normal contingencies introduced in current contracts.

quantified, but considering that workforce costs are a significant driver of the European space industry cost equation, their potential impact on programme costs and margins must be anticipated.

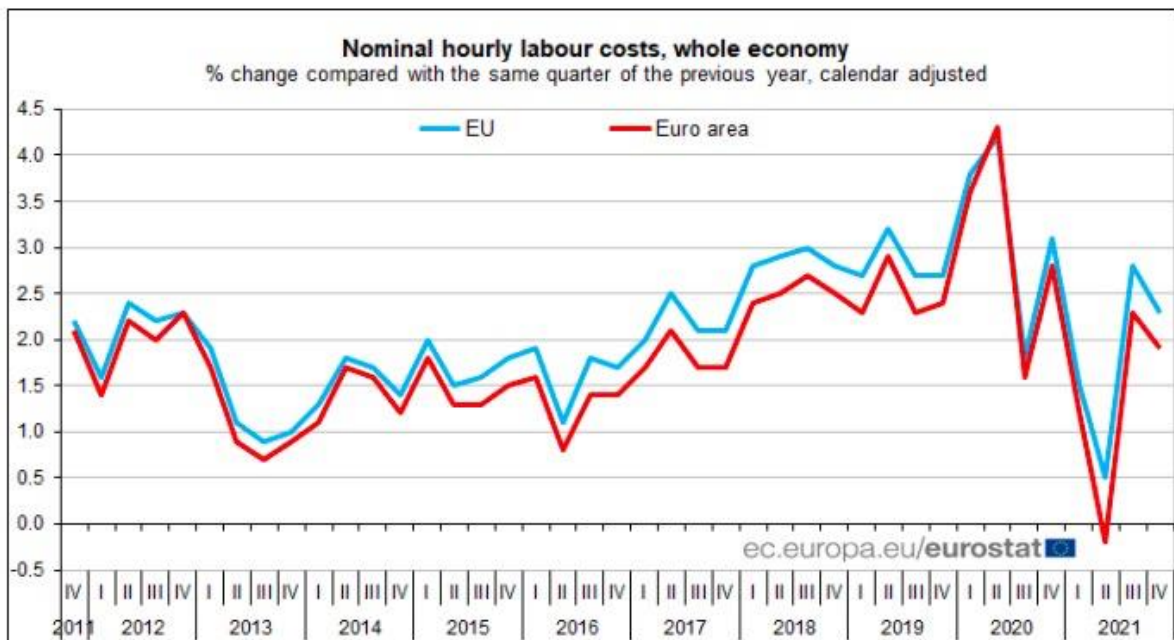
In 2023, the inflationary pressure on industry will represent in the order of 500 to 750M€ in over costs, with three majors over costs sources which are to be addressed:

- 350-400M€ of additional manpower costs/year;
- a yet unknown amount of increased costs of energy;
- 200M€ of unforeseen additional cost of supplies.

If the inflationary trend is confirmed, additional over costs will be registered in the future. ESA and EU Member States should anticipate and prepare for such a scenario.

Inflation of workforce costs - a 350-400M€ bill as soon as next year

Europe has been home to a decade of unprecedented nominal wage stability, with limited annual variations between 0,6 and 3% for a decadal average at 1.9% in the Euro area and 2.3% all Europe considered⁸.



The European space industry employs a total of 53000 employees⁹ (FTE) producing worth 8,6B€ of final sales¹⁰. If workforce costs were to grow by 8% (to compensate the average inflation in the Euro zone), **the sector would be faced with 350 to 400M in additional workforce cost as soon as 2023, worth 4% of the value of sales**. Considering the very low profit margins in the sector, these 4% alone could have dramatic impacts on the sector, with some companies unable to cover the cost of work with the customer revenues.

ESA programmes, together with other institutional programmes managed by the EU, Eumetsat and national agencies, represent 60-70% of industry revenues¹¹, **it is thus expected that workforce increasing costs**

⁸ Source Eurostat (18/3/2022) : <https://ec.europa.eu/eurostat/documents/2995521/14358248/3-18032022-BP-EN.pdf/bbef1f4e-52c4-4a65-8887-4ebe8220ac26>

⁹ Source: Eurospace facts & figures 2022 survey - not yet published

¹⁰ Ibid

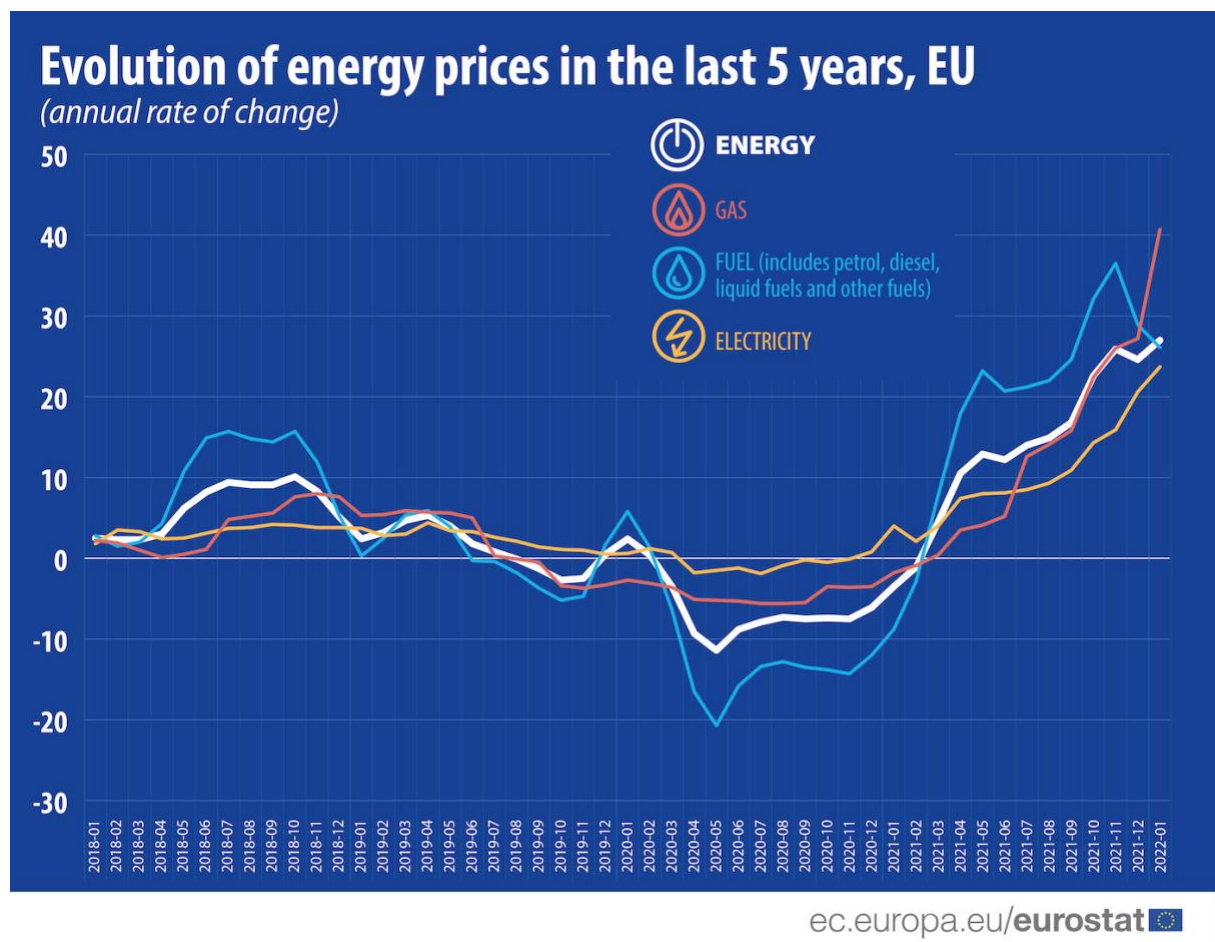
¹¹ Source: Source: Eurospace facts & figures 2022 survey - not yet published

negatively affect these programmes up to 250-280M€ as soon as 2023 under the pressure of rising wages in industry.

Inflation on energy - impact still TBA

The rising prices of energy have a significant impact on the global inflation equation (<10% on consumer price index), and may have an even higher impact when considering energetic industrial processes (e.g., clean rooms, EGSE and test equipment, assembly line robots, welding, composite curing, additive manufacturing, liquid gas production).

The cost of energy is the fastest paced component of the current inflationary crisis, reaching an all-time high of 27% in 2022¹². Depending on the energetic production mix and local authorities' energy price and tax policies, the rising costs of inflation have diversely impacted European countries.



Of course, if the cost of energy is 'only' 10% of the consumer's consumption basket, it may represent higher shares of the industrial production costs. **The impact of rising costs of energy on the industrial space sector are still under assessment.** We are still lacking a full review of energy costs increase, but some members are reporting that their electricity bill has already grown by **more than 50% and the gas supply by more than a factor 3.**

¹² Source Eurostat: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220225-2>

Inflation on supplies (equipment, components, sub-assemblies, materials, ...) - 200M€ over cost

The European space supply chain is organised with multiple layers of contribution, with lower tier contracts representing as much as 3,5-4B€/year. Assuming an evenly spread inflation on lower tier supplies at 4,2% (consistent with Eurostat assessment of current inflation on industrial goods in Europe, it is credible to anticipate growing cost of supplies to globally impact the supply chain at 170-200M€.

Notwithstanding, this so far relatively moderate impact does not recognise the peculiarities of some critical supplies in the space supply chain confronted with high cost increase (factor 2 and more¹³), such as Aluminium, Xenon, Titanium (and base alloys), and Nitrogen...

The specifics of each case may call for the detailed investigation of individual situations with regard to rising cost of supplies, when affected by exceptional increases.

¹³ While for internationally traded commodities (such as raw metals) baseline prices are well known (and have skyrocketed, e.g. Aluminium +180% year on year), for other supplies, prices increases cannot be generalised and are contingent also on contractual conditions.