



GOGLA

Supply Chain Disruption Survey - Results

June 2021

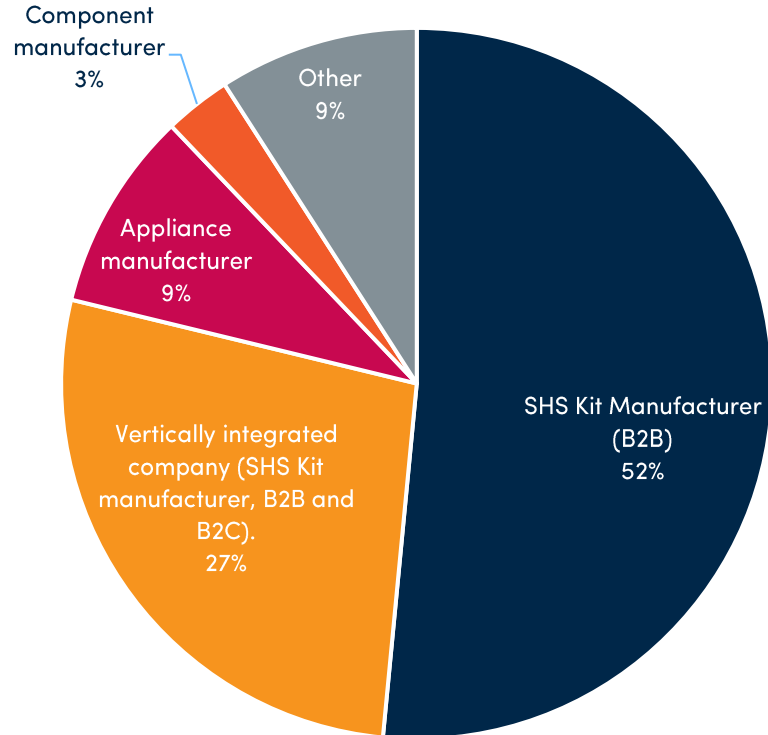


Background



- There is significant disruption in global manufacturing due to the Covid-19 pandemic, with electrical and electronic industries bearing the brunt. High demand of components and parts is leading to shortages and price increases that is hurting even big car manufacturers.
- GOGLA conducted a survey to get insights into how the off-grid solar manufacturing base is being affected.
- The aim is to raise awareness in the industry about the disruption and to better understand the scale of the challenge and potential impacts on consumer prices and product availability.

- 12 – 16 questions
- 33 respondents
 - 17 SHS Kit Manufacturers
 - 9 Vertically Integrated Companies
 - 3 Appliance Manufacturers
 - 1 Component Manufacturer
 - 3 Other (SHS Design & Manufacture Consultant, SAAS Provider, Solar Modules Manufacturer)



- Level and time of disruption
- Product stock-outs

- Changes to product range
- Changes to product performance

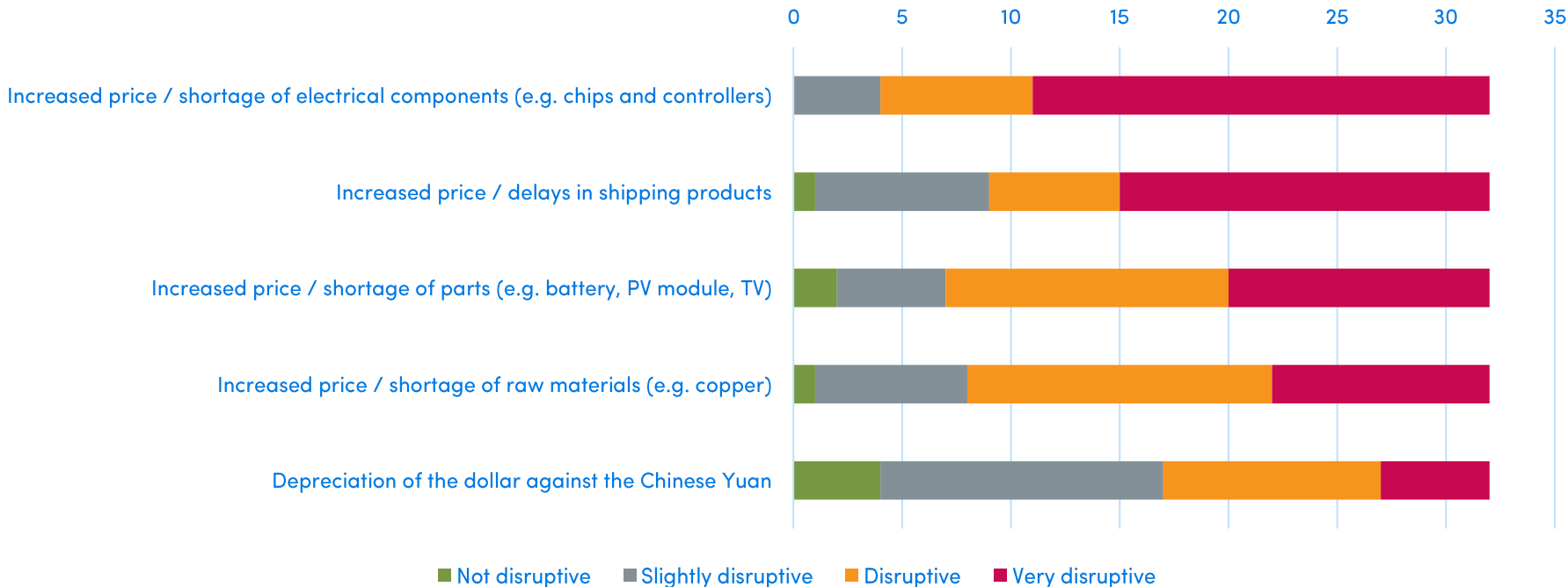
- Increase in prices of parts
- Increase in lead time of parts
- Increase in consumer prices



How disruptive are these issues for your business? (1)



n=32



How disruptive are these issues for your business? (2)

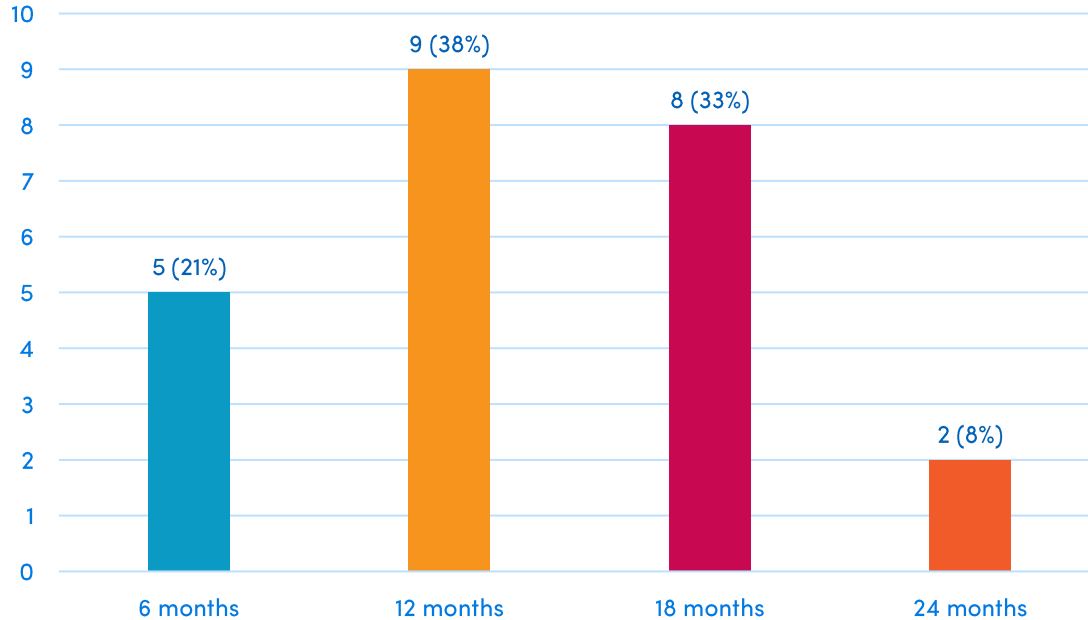


- 'Increasing price of packaging raw material'
- 'MCU shortage'
- 'Increased labor cost'
- 'Because of COVID-19, factory not only face problem with material shortage, cost increasing, sometime also should buy material in cash, no credit, which cause very heavy capital burden to factory. Meanwhile face to shortage of labour.'
- 'We've been feeling the pain of the component shortages mainly through our interactions with manufacturers. They are requesting us to migrate our firmware to other chip sets (a time-consuming task) and our customers (distributors) are being told stock may be delayed.'
- 'Cables, which are with copper, are influenced by increased copper pricing. Solar cells are influenced by poly-silicon price increase.'
- 'Slowed down product development'

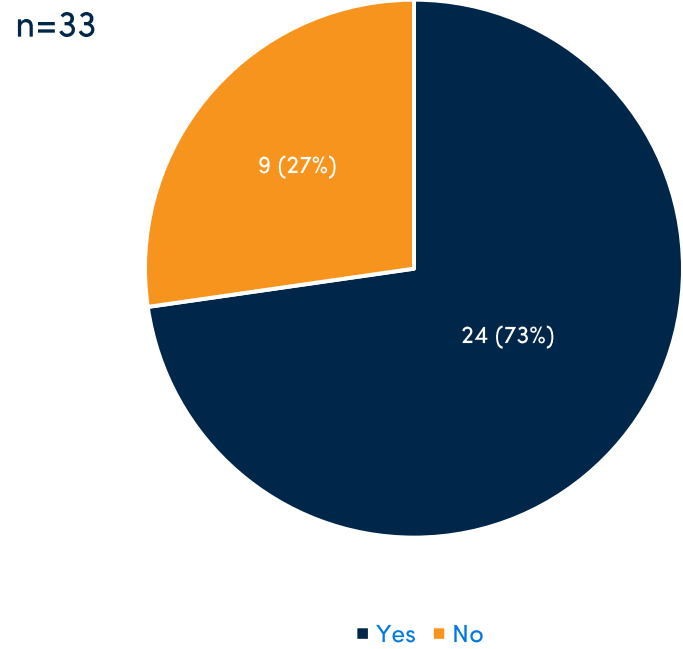
For how much longer do you expect the supply chain disruption to continue?



n=24



Do you expect this will lead to product stock-outs?



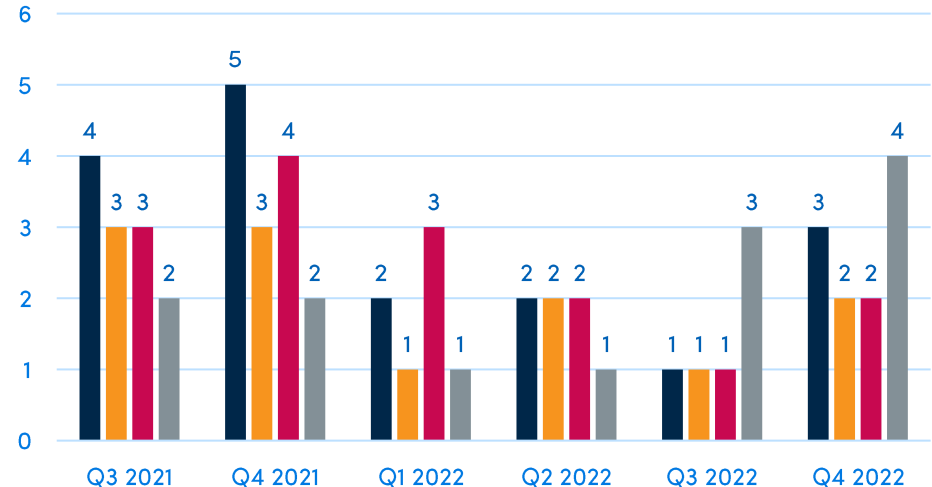
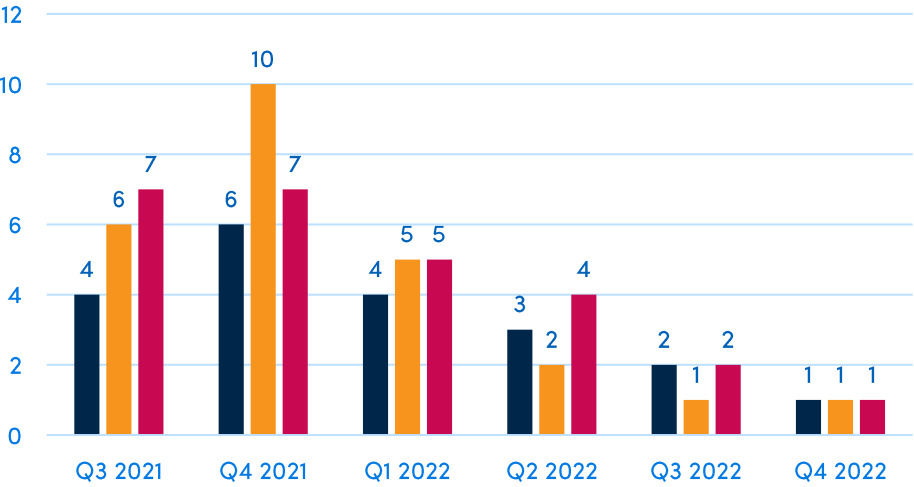
When do you expect the product stock-out will be? (multiple periods possible, please tick all that apply)



n=19

Lighting products

Appliance products

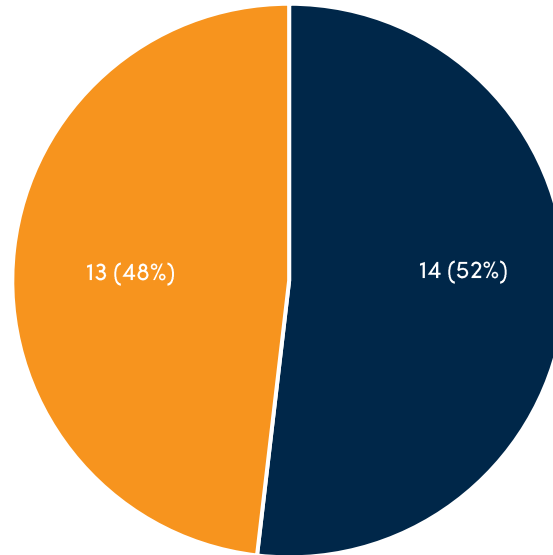


■ Solar lantern (0 – 3 Wp) ■ Multi-light system (3 – 11 Wp) ■ SHS Kit (11 – 350 Wp)

■ TV ■ Fan ■ Refrigerator ■ Solar Water Pump

Do you expect to make changes to your product range as a result of shortages? (1)

n=27



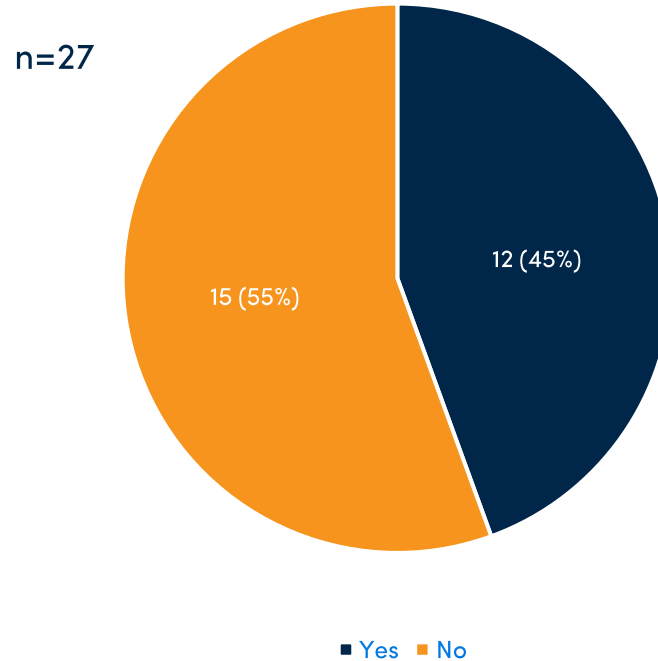
■ Yes ■ No

Do you expect to make changes to your product range as a result of shortages? (2)



- 'Pulling the MP3 module out of the solar home system; increasing the cost of the TV system; researching alternative TV sizes'
- 'MCU quality and price'
- 'We accelerated the phase out of some products and concentrate only on core products.'
- 'Turn to upgrade new design and model'
- 'When the radio chip face shortage we will stop promote the products with radio'
- 'Most of our products are gotten the Verasol verification , If we change it , Do we need to retest these products? Testing cost and time are much longer'
- 'It may reduce the number of options, e.g. only 24" TV available rather than 24" and 32".'
- 'Reducing the product range by 30%'
- 'Provide slightly less power each module.'
- 'Reduced the number of options and therefore reduce the competitiveness of the company'

Do you expect to make changes that will impact the product performance or functionality? (1)



Do you expect to make changes that will impact the product performance or functionality? (2)

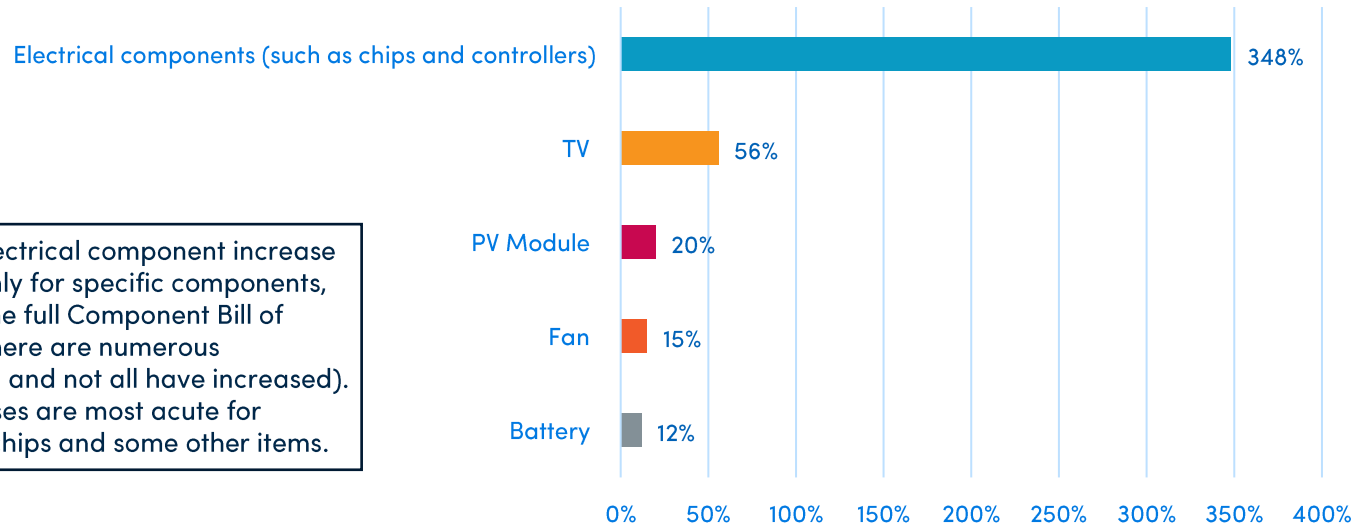


- 'Removing MP3 module will remove some functionality of the product (but will not impact quality)'
- 'Slightly affected.'
- 'Quality not stable.'
- 'Change into other solution'
- 'Changing one of the main functioning assembly affects the whole product. This leads to partially new design (brackets, holders, adapters...) and new characteristics. The testing procedure has to be redone to evaluate the new specs. Datasheets must be updated to the latest specs.'
- 'If can change the new supplier, First , we promise that these new component's function are Ok from our side, but these new component are need more time to check the reliability test. Second, I can not confirm if the new component will be shortage in the future. Third, Please double check if need to retest from Verasol policy'
- 'In some cases, we have been able to find alternative components. Although these may require test and validation there is no visible impact from a customer perspective. In another case, it might be necessary to offer a simpler version of a product without the display that the current version has for remaining credit, etc., and just use LEDs instead We are currently working on alternative electronic solutions for lights which would result in the dimming feature being deleted.'
- 'Reducing cable size, mounting flexibility'
- 'It makes the product more expensive; we have less control over quality due to purchase from new suppliers with some left-over stock'
- 'Had to change the design to integrate a more expensive off-the-shelf board, which increases cost, increases complexity, development time, and lowers quality.'
- 'We will need to remove a secondary, consumer-facing feature of the system due to missing critical components'

What has been the increase in prices of parts from your suppliers as a result of the shortage (in %)?

n=20

Price increase in % (average)



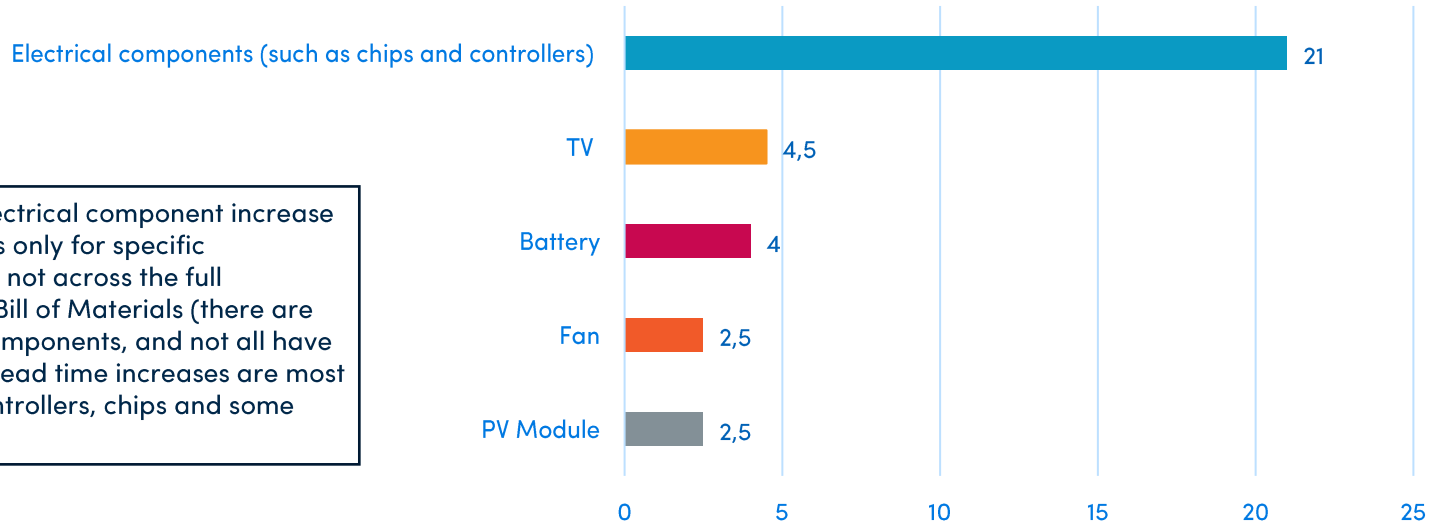
Note: The electrical component increase of 348% is only for specific components, not across the full Component Bill of Materials (there are numerous components, and not all have increased). Price increases are most acute for controllers, chips and some other items.

What has been the increase in lead time of parts from your suppliers as a result of the shortage (in weeks)?



n=18

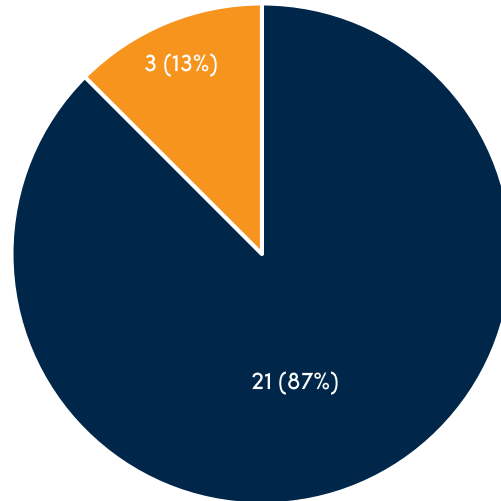
Lead time in weeks (average)



Note: The electrical component increase of 21 weeks is only for specific components, not across the full Component Bill of Materials (there are numerous components, and not all have increased). Lead time increases are most acute for controllers, chips and some other items.

Do you expect the supply chain disruptions will lead to increased prices for consumers?

n=24



■ Yes ■ No

By how much do you expect to increase the consumer price as a result of the supply chain disruptions? (in %)



Price increase in % (average)

n=14

