Global Market for Infant Formula and Dairy Ingredients 2015-2020

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Report outline

1. Introduction
2. Infant formula market
3. Infant formula industry
4. Dairy ingredients used in infant formula
5. Conclusions
6. Appendix

Market research of infant formula market and industry

Infant formula market

- Market development 2010-2015 and forecast 2016-2020
  - Global market
    - Value
    - Volume
    - Growth rates
  - Regional markets
    - Western Europe
    - Eastern Europe
    - North America
    - Asia
    - Latin America
    - Middle East & Africa

Infant formula industry

- Key global/regional /local companies
  - Market shares in key markets
  - Estimated volume 2020
  - Strategic alliances
- New product development and launches with key ingredients

Dairy ingredients in infant formula

- Estimated volumes for:
  - SMP
  - DWP
  - Lactose
  - WPC80
  - Emerging dairy ingredients

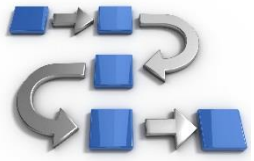
Conclusion

- Analysis and summary

Infant Milk Formula (IMF) - types and terminology

- Infant formula products are substitutes for breast feeding, covering the whole age span from 0-3 years
- Infant formulas represent a very large share of the overall baby foods market
- Infant formulas are typically classified according to age of baby:

Formula 1	• 0-6 months • First age / (pre-) Term starter / Standard
Formula 2	• 6-12 months • Second age / Follow-on
Formula 3	• 1-3 years • Third age / Growing-up / Toddler
Formula 4 / Special infant formula	• Whereas infant formulas are generally based on regular dairy ingredients, Formula 4 is an umbrella for special formulas, such as hypo-allergenic formulas based on hydrolyzed proteins, as well as lactose-free, anti-reflux formulas, etc.

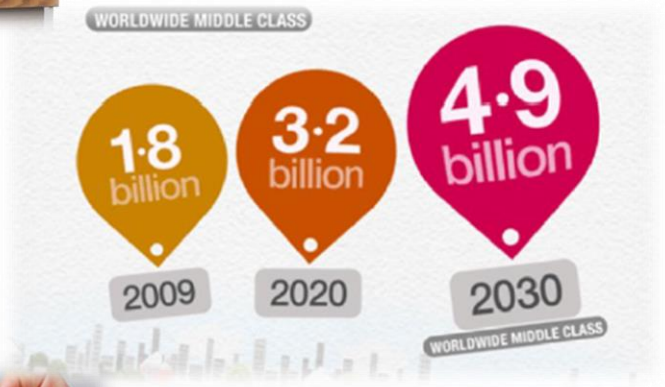


Methodology

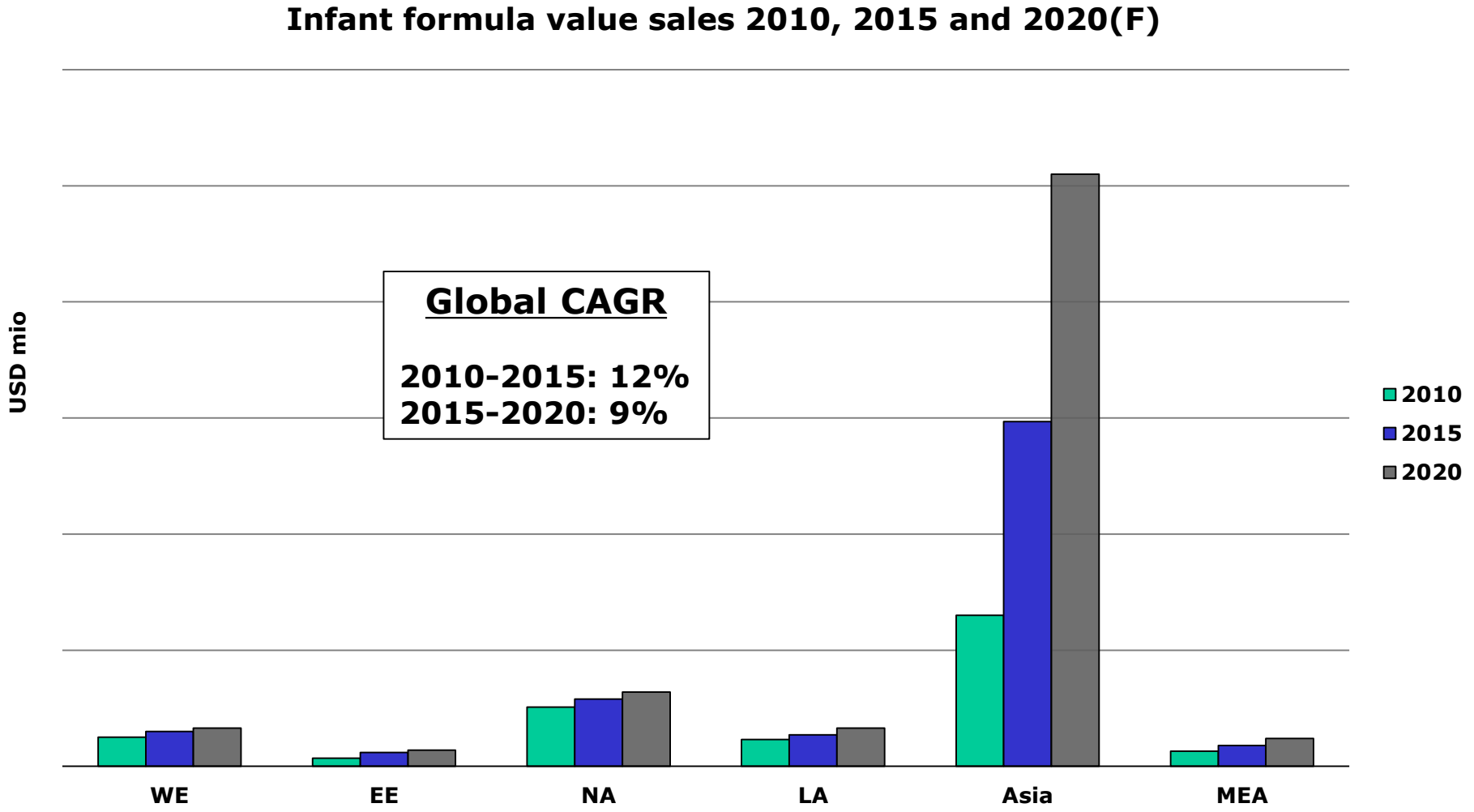
- Value and volume figures are mainly sourced from Euromonitor
- Global/regional market value figures are based on calculated USD value figures
- All national market values given in national currencies converted from local currency into USD by 3A
- Conversion of currency for ’10, ’15 and ’20 into USD done using same conversion rate
- Given this methodology country market values in USD are affected by the level of local inflation as well as the value of the local currency vis-à-vis the value of the USD
- National market values in USD will therefore be seen as an approximate figure

Five key growth drivers in IMF

1. **Econmic growth and job creation**
2. **Increasing number of women in workforce**
3. **Middle-class with increased disposable income**
4. **Increasing spend on premium nutrition**
5. **Baby population**

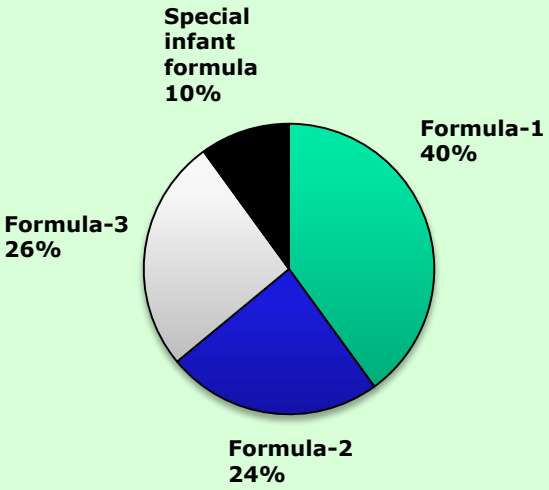


Regional breakdown of infant formula 2010, 2015 and 2020(F)



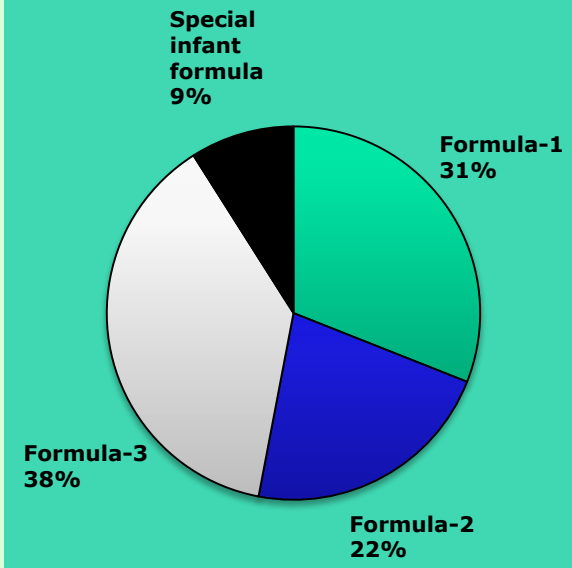
Value distribution - per infant formula category

2010



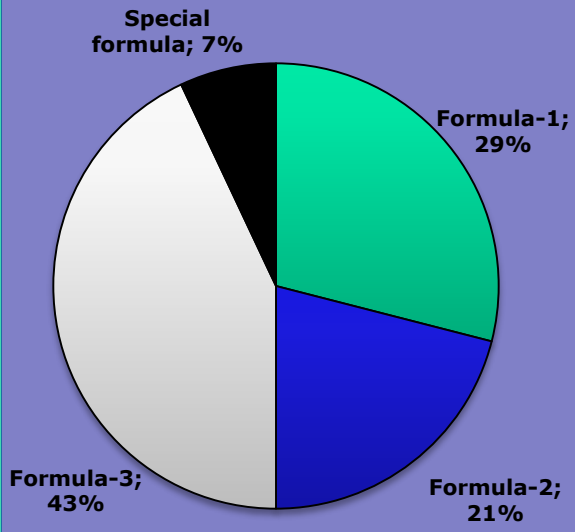
Total global value USD xx bn

2015



Total global value USD xx bn

2020(F)



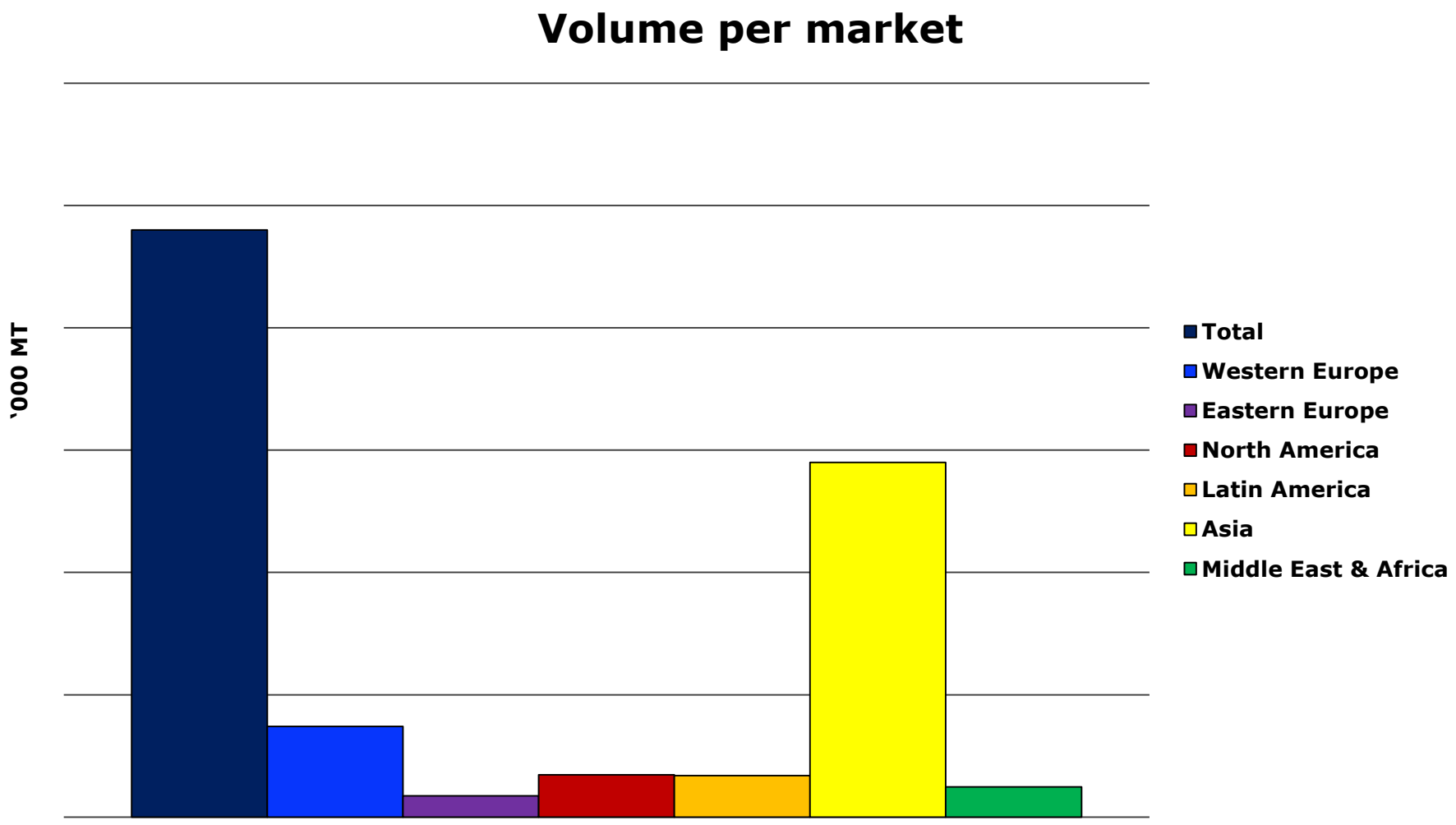
Total global value USD xx bn

A small handful of global companies the 'Big Four' dominate the global IF business in 2015

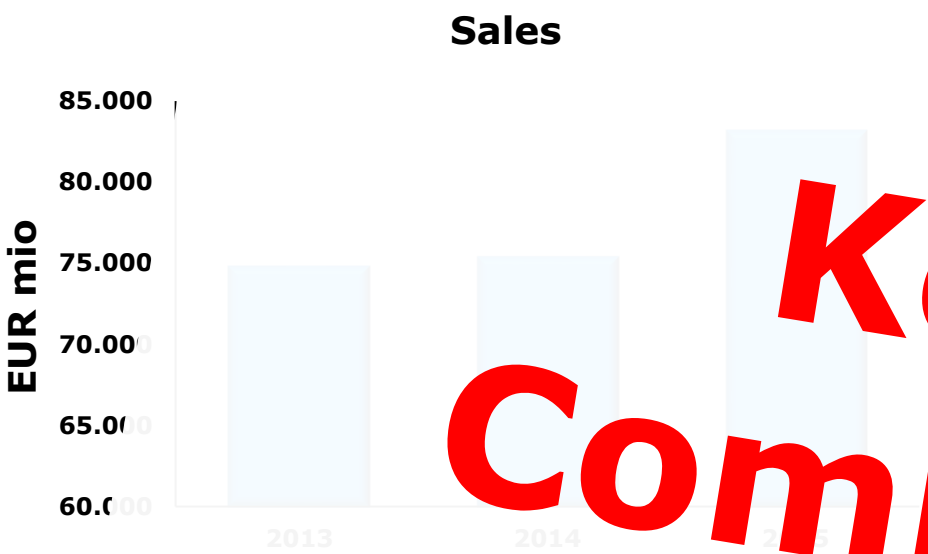
Overall ranking	Company	Approx. market share %
1	Nestlé	22
2	Danone	12
3	Abbott	7
4	Mead Johnson	5

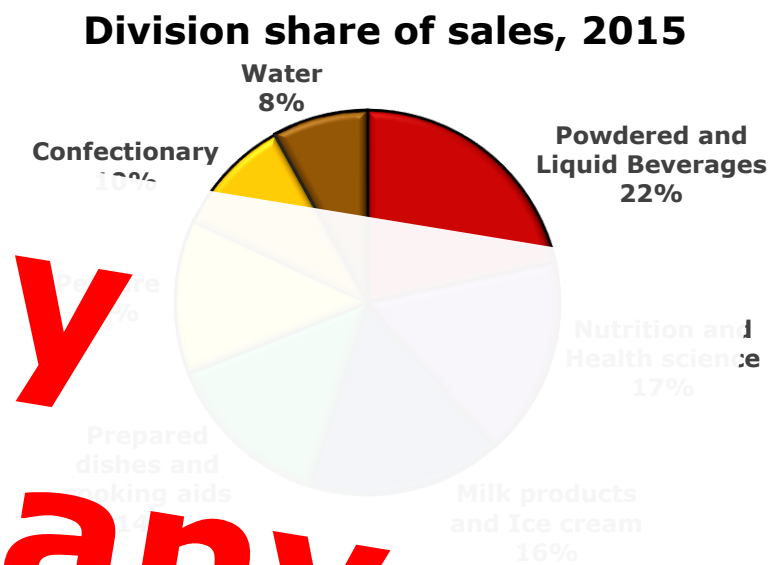
- Nestlé and Danone are key players in all 4 IMF categories
- Mead Johnson and Abbott have their relative strength in the Formula-1 and Formula-2 product categories. Mead Johnson also have particular strength in special formula category
- In 2012, Nestlé bought Pfizer's infant nutrition unit for USD 11.9 bn (After Pfizer having itself bought Wyeth)

Global IMF markets in 2015



Nestlé
- No. 1 globally in infant formula by far





Key Company Profiles

- Nestlé is a major infant formula company with products designed for infants in all development stages and infant formula sales of more than [illegible] bn in 2015 making it the largest company in the infant formula industry
- Nestlé infant formula brands include [illegible] 26 Gold (Wyeth), ranges of products for all stages of infants' development, and Alfaré, [illegible] designed to meet nutritional needs of infants with cow's milk allergies and other food [illegible] rances
- Nestlé has three reportable market segments comprised of AMS, EMENA and AOA accounting for 44%, 31% and 25% of net sales in 2015 and had organic growth of 4%

Most active national markets of NPL
- China by far the most active national market

Danone
- infant nutrition product examples

Description:	Ingredients include:
Aptamil First Infant milk is a nutritionally complete formula for infants between 0-6 months as a [illegible] alternative to breastfeeding [illegible] powdered forms	**Demineralized whey powder**, Vegetable Oils, **Lactose**, **Skimmed milk powder**, **Galactooligosaccharides**, **Whey protein Concentrate**, [illegible] osaccharides, etc.
Description: [illegible] Nutri + Step [illegible] formula [illegible] support the nutritional [illegible] babies after 6 months	**Ingredients include:** **Skimmed Milk Powder**, **Demineralised Whey Powder**, Vegetable Oils, **Lactose**, [illegible] charides, **Whey** [illegible] Concentrate, etc.

Product examples with ingredients

Abbott Laboratories Inc.
- infant nutrition product examples

Description:	**Ingredients include:**
Similac Advance is a nutritionally complete, milk-based, stage 1 infant formula for use as a sub[illegible] an alternative to br[illegible] 0-12 mo[illegible]	**Nonfat Milk (Skimmed Milk Powder), Lactose, Whey Protein Concentrate**, High Oleic Safflower Oil, Soy oil, Coconut Oil, **Galactooligosaccharides**, etc.
Description: Similac Sensitive is a 19-Cal/fl oz, nutritionally complete, reduced-lactose milk-based, stage 1 alternative to [illegible] formulas for mild tolerance [illegible] symptoms such as fussiness and gas due to lactose sensitivity	**Ingredients include:** Water, Maltodextrin, **Milk Protein Isolate**, High Oleic Safflower Oil, Sugar, Soy Oil, Coconut Oil, **Galactooligosaccharides**, etc.

Product examples with ingredients

SMP volume estimation
- methodology I: extrapolation from reported SMP content

Methodology I	Value	Volume	% SMP	SMP volume
Total	*USD 45 bn*	*2,400,000 MT*		*674,000 MT*
Formula-1	USD 14 bn	570,000 MT	12%	68,400 MT
Formula-2	USD 10 bn	600,000 MT	25%	150,000 MT
Formula-3	USD 18 bn	1,200,000 MT	40%	440,000 MT
Formula-4	USD 3 bn	130,000 MT	12%	15,600 MT

- Methodology I calculates SMP volumes based on percentage content of SMP, as reported in IF formula labels
- Based on the extrapolation from the IF volumes and reported SMP content, approx. 674,000 MT SMP was applied in infant formula in 2015
- Most SMP goes into Formula-3, whereas Formula-1, Formula-2 and Formula-4 use an IMF-grade SMP of higher quality due to higher microbiological standards in these IF products

Global SMP Volume usage

Whey proteins for infant formula - demineralized whey protein volume estimation

	Volume	Protein content (avg. 11%)	% whey protein	Whey protein	DWP share	DWP (100% protein)	DWP (13% protein)
Formula-1	570,000 MT	62,700 MT	60%	37,600 MT	60%	22,600 MT	173,800 MT
Formula-2	600,000 MT	66,000 MT	60%	39,600 MT	50%	19,800 MT	152,300 MT
Formula-3	1,100,000 MT	121,000 MT	20%	24,200 MT	10%	2,400 MT	18,500 MT
Formula-4	130,000 MT	14,300 MT	50%	7,200 MT	10%	700 MT	5,400 MT
Total	*2,400,000 MT*	*264,000 MT*		*108,600 MT*		*45,500 MT*	*350,000 MT*

Global DWP Volume usage

- Based on above calculation, DWP volume has been estimated that 350,000 MT DWP was applied in infant formula in 2015
- Given the CAGR on IF volumes of 7.5%, DWP demand in infant formula can be estimated to reach 500,000 MT per year towards 2020

Whey proteins for infant formula
- whey protein concentrate volume estimation

	Volume	Protein content (avg. 11%)	% whey	Whey protein	WPC share	WPC (100% protein)	WPC (80% protein)
Formula-1	570,000 MT	62,700 MT	60%	37,[illegible] MT	40%	15,000 MT	18,800 MT
Formula-2	600,000 MT	66,000 MT	60%	39,600 MT	50%	19,800 MT	24,800 MT
Formula-3	1,100,000 MT	121,0[illegible]	60%	[illegible] MT	50%	21,800 MT	27,300 MT
Formula-4	130,000 MT	14,300 MT	50%	7,200 MT	[illegible]%	6,500 MT	8,100 MT
Total	*2,400,000 MT*	*264,[illegible]00 MT*		*108,600 MT*		*63,100 MT*	*79,000 MT*

Global WPC80 Volume usage

- Based on above calculations of WPC80 volume it can be estimated that 79,000 MT DWP was applied in infant formula in 2015
- Applying the CAGR of 1.5% demand for WPC80 in infant formula can be estimated to grow up to [illegible] per year towards 2020

Lactose volume estimation

- Lac… of carbohydrages is provided both as a pure pro… duct as well as in the form of DWP, WPC, SMP, etc. making est… imation of added pure lactose somewhat complicated
- Pu… re lactose is mainly added to … in Formula-2 an… d even less in Formula-3 and Formula-4 using more maltodextrin et… c.
- Gl… obally, the dema… for infant formula is approx. 1,300,000 MT in 2015 of which 35-37% has been estimated to go into infant fo… rmula leading to approx. 455,000-480,000 MT lactose being added i… n infant formula
- G… iven that most of the pure lactose goes into infant formula is used i… n formula-1 and formula 2, perhaps volume growth in these infant f… ormula categories, estimated to approx. 5% corresponding to 25,000-27,000 MT annually is a good indicator of growth in demand of lactose in infant formula by 2020

Global Lactose Volume usage

Emerging dairy ingredients

- **Galactooligosaccharides** are prebiotics that raises levels of certain probiotic bacteria supporting healthy gut flora and immune system function. Usage of GOS in infant formula has increased strongly in recent years. The volume of GOS applied in infant formula amounts to **more than 30,000 MT** in 2015
- **Protein Hydrolysates** are easily ingested dairy proteins as they are already partially digested through the breakdown into peptides, thereby permitting [illegible] and making the protein non-allergenic. Whey Protein Hydrolysate volume used in infant formula in 2015 is estimated to be **more than 10,000 MT**
- **α-Lactalbumin** is the primary whey protein found in human breast milk accounting for 20% of total protein and containing all essential amino acids and CAA needed by humans, thus making it an important protein for growth in infants. In whey formulow's [illegible] β-Lactoglobulin which is not contained in human breast milk accounts for approx. 50%, and α-Lactalbumin for around 20-25%. Some premium infant formulas are produced using α-Lactalbumin for this reason. Estimated use in infant formula is between **1500-3,[illegible] MT** in 2015
- **Lactoferrin** is a glycoprotein present in both colostrum and human milk with higher concentrations in the latter. It is an essential factor in immune response and particularly important for the health and functioning of the intestinal tract. **150-200 MT** of Lactoferrin is estimated to have been applied in infant formula in 2015, most of which in Asia

Emerging Dairy Ingredients

Global Infant Formula Report – project management and costs

Team

3A Business Consulting team:

- Managing partner - Tage Affertsholt
- Junior consultant – Daniel Pedersen

Time

Report available in PDF format – in total approx. 120 slides – from September 2016

Cost

EUR 3,600