



GAIN™ - Growing Ever Stronger!

Jim O'Brien, GAIN™ Convenor

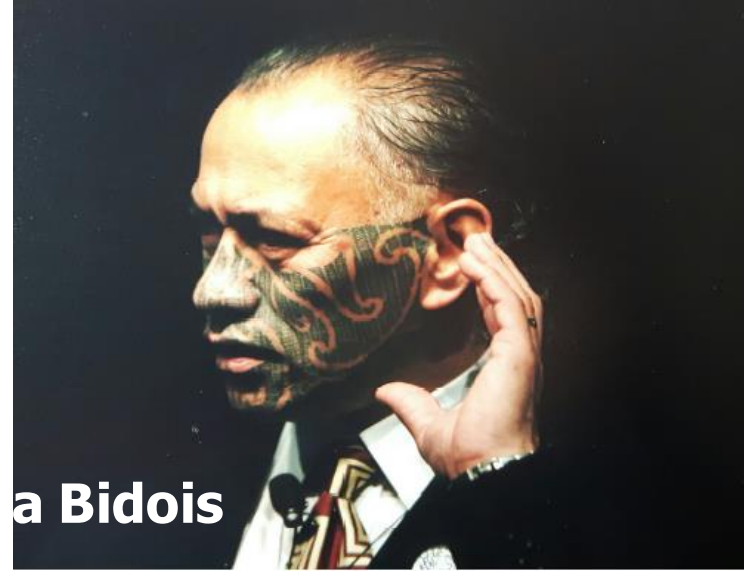
Quarry/NZ Conference

July 6, 2023

NEW ZEALAND – LAND OF WELCOMES!



Ngahihi o te Ma Bidois



- Will never forget the very special welcome to Rotorua in 2011
- Was very honoured to be invited to the AQA50 Celebration in 2019 in Christchurch
- And delighted to be welcomed back – this time with the whole GAIN Team to Queenstown and Christchurch!

GAIN REPRESENTS 77% OF GLOBAL AGGREGATES!

Just to recap:

- GAIN™ is a voluntary liaison of aggregates associations around the world, with the vision of promoting a more sustainable aggregates industry globally
- GAIN now has 20 members on all 6 continents, representing 77% of global aggregates production of 40.5bnt
- It continues to grow in strength and ambition...
- See www.GAIN.ie.



GAIN – HOW WE WERE BORN AND GREW UP...



- GAIN founded in 2010 with only 5 members...
- NZ joined in 2012
- Dream was that we all had similar problems, but could share different solutions!
- Sharing of best practice benefitted everyone!
- Went from strength to strength in biennial meetings

5th GAIN MEETING IN BARCELONA SET RECORDS!



- By 2018, the formula was well-proven
- Barcelona welcome attendees from all 6 continents...
- Next meeting was planned for 2020 in Argentina...
- But COVID came along!

COVID LED TO VIDEO CONFERENCE CALLS!



- Since COVID began, we have had 22 video conference calls
- Each of approx 1.25 hours, typically 16-20 people attending, kindly hosted by AE-UEPG
- Specific topic each call combined with “friendly chat”, documented with notes within a few days
- Time zones dictate balance between early (5am in Alberta, Canada to 11pm in Wellington, New Zealand, but there is great value in spanning the globe!

Topics covered included:

- COVID safe working protocols
- Challenging COVID lockdowns
- Best practice in river extraction
- Curtailing illegal sand extraction
- Production data and trends
- Recycling
- Sustainability Targets
- Skills Development/Training (IQ)
- Resource planning, permitting
- Supply Chain Challenges
- Water Management
- Air Quality Management

6th GAIN MEETING IN QUEENSTOWN – BEST YET!



VERY SUCCESSFUL QUEENSTOWN MEETING!



**Attendance included China,
South Korea, Malaysia,
Europe, Canada, USA,
Colombia, Argentina, NZ**

**Apologies from Australia,
India, South Africa, Mexico,
Brazil, Japan**

Topics covered included:

- National Overviews, Structure Challenges and Opportunities
- Economic Developments
- Sustainability Leadership
- Health, Safety, Social Issues
- PR and Communications
- Brainstorming our GAIN Strategy to 2030 and beyond

GAIN STRENGTHS.....



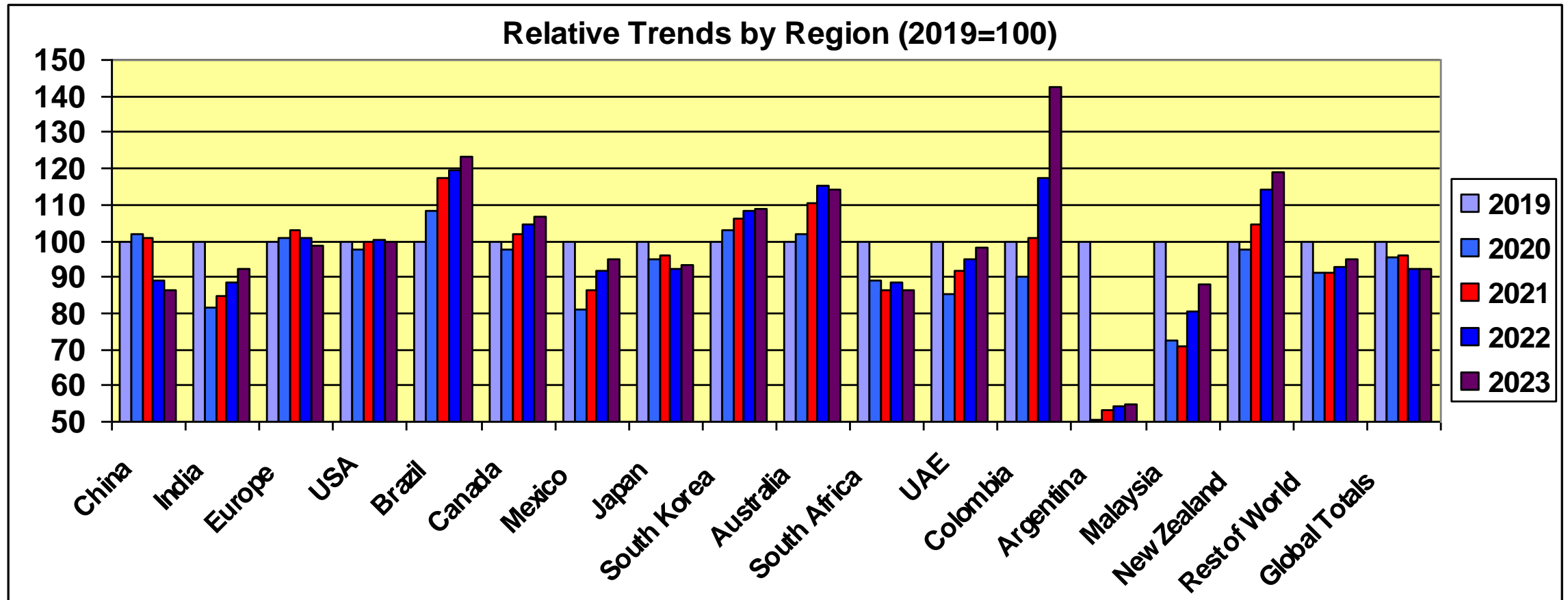
- ***GAIN Vision*** is a truly Sustainable Global Aggregates Industry
- ***GAIN Mission*** is friendly sharing of Best Practices globally
- Most used bulk product on the planet = 40+ billion tons
- Extracted from ~200,000 quarries
- Employing some 3.5 million people, and many more indirectly
- Mostly small/medium-size companies
- Annual sales around US\$350 billion!
- Highly sustainable activity, essential to society!
- ***GAIN is unique in its trans-global structure!***
- ***GAIN is all about extending the hand of friendship and support – in that we all benefit, and so does society!***

GLOBAL PRODUCTION UPDATE, 2019-2023

GAIN Country	Actual 2019 mt	Actual 2020 mt	% Change 2020 v 2019	Actual 2021 mt	% Change 2021 v 2020	Actual 2022 mt	% Change 2022 v 2021	Estimated 2023 mt	% Change 2023 v 2022
China	19560	19890	1.7%	19680	-1.1%	17420	-11.5%	16890	-3.0%
India	6035	4920	-18.5%	5125	4.2%	5330	4.0%	5580	4.7%
Europe	2986	3005	0.6%	3079	2.5%	3013	-2.1%	2950	-2.1%
USA	2388	2331	-2.4%	2388	2.4%	2390	0.1%	2380	-0.4%
Brazil	535	580	8.4%	628	8.3%	640	1.9%	660	3.1%
Canada	417	408	-2.2%	425	4.2%	435	2.4%	445	2.3%
Mexico	400	325	-18.8%	346	6.5%	366	5.8%	380	3.8%
Japan	375	355	-5.3%	360	1.4%	345	-4.2%	350	1.4%
South Korea	368	378	2.7%	390	3.2%	398	2.1%	400	0.5%
Australia	185	188	1.6%	204	8.5%	213	4.4%	211	-0.9%
South Africa	180	160	-11.1%	155	-3.1%	159	2.6%	155	-2.5%
UAE	158	135	-14.6%	145	7.4%	150	3.4%	155	3.3%
Colombia	144	130	-9.7%	145	11.5%	169	16.6%	205	21.3%
Argentina	137	69	-49.6%	73	5.8%	74	1.4%	75	1.4%
Malaysia	199	144	-27.6%	141	-2.1%	160	13.5%	175	9.4%
New Zealand	42	41	-2.4%	44	7.3%	48	9.1%	50	4.2%
GAIN Totals	34109	33059	-3.1%	33328	0.8%	31310	-6.1%	31061	-0.8%
Rest of World	9918	9020	-9.1%	9031	0.1%	9216	2.0%	9439	2.4%
Global Totals	44027	42079	-4.4%	42359	0.7%	40526	-4.3%	40500	-0.1%

- February 2023 review with GAIN members of best estimates of production trends 2019-2023
- Mostly notable change for 2022 was -11.5% decline in China, further -3% anticipated in 2023
- Hence 2023 global figure is ~40.5bnt, still -8% or 3.5bnt down on pre-COVID 2019

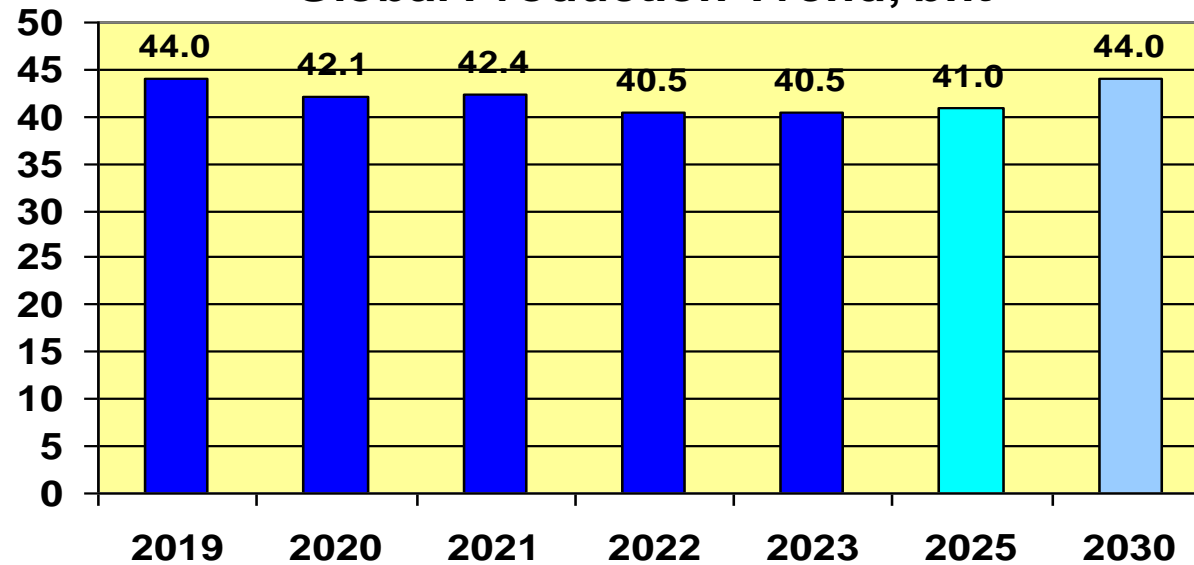
PRODUCTION TRENDS BY REGION



- Graph illustrated changes by region, in each taking the 2019 figure as 100%
- China is the most significant decline, 2023 being almost -15% down versus 2019 (drop of 2.7bnt)!
- Almost all other regions now in slow to modest growth!
- But could still take to 2030 to recover to 2019 level – depends on geopolitics, financial stability

GLOBAL PRODUCTION TREND & TONNES/CAPITA

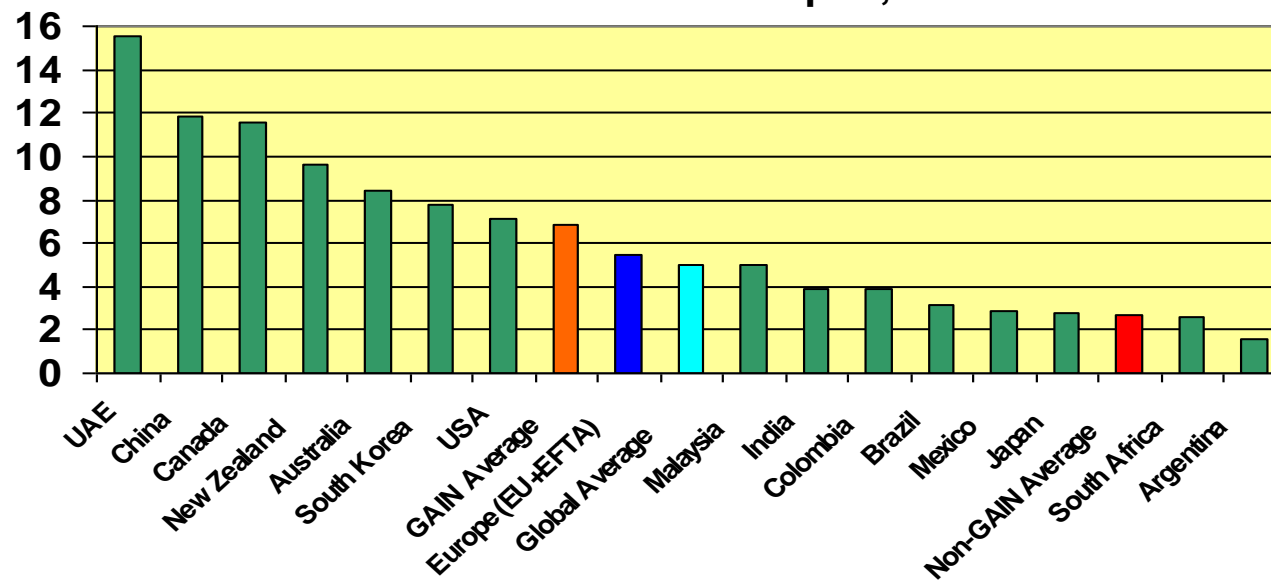
Global Production Trend, bnt



In terms of the global production trend

- 2019, pre-COVID, outlook was positive
- In 2020, COVID knocked 2bnt off global production – initially feared worse!
- 2021 saw a return to modest recovery
- In 2022, war started, China slowed, dropping ~2bnt off global production
- 2023 on – hoping for peace & stability!

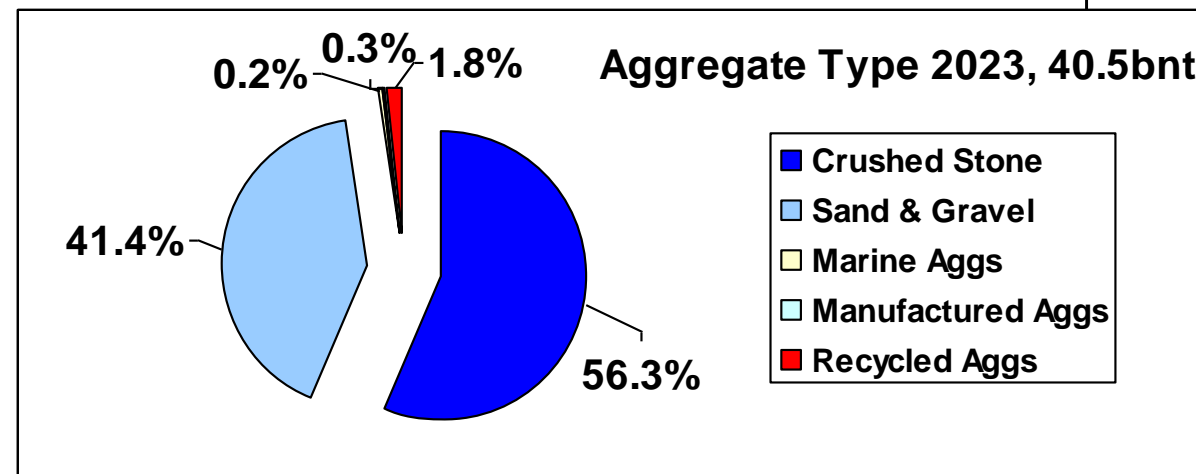
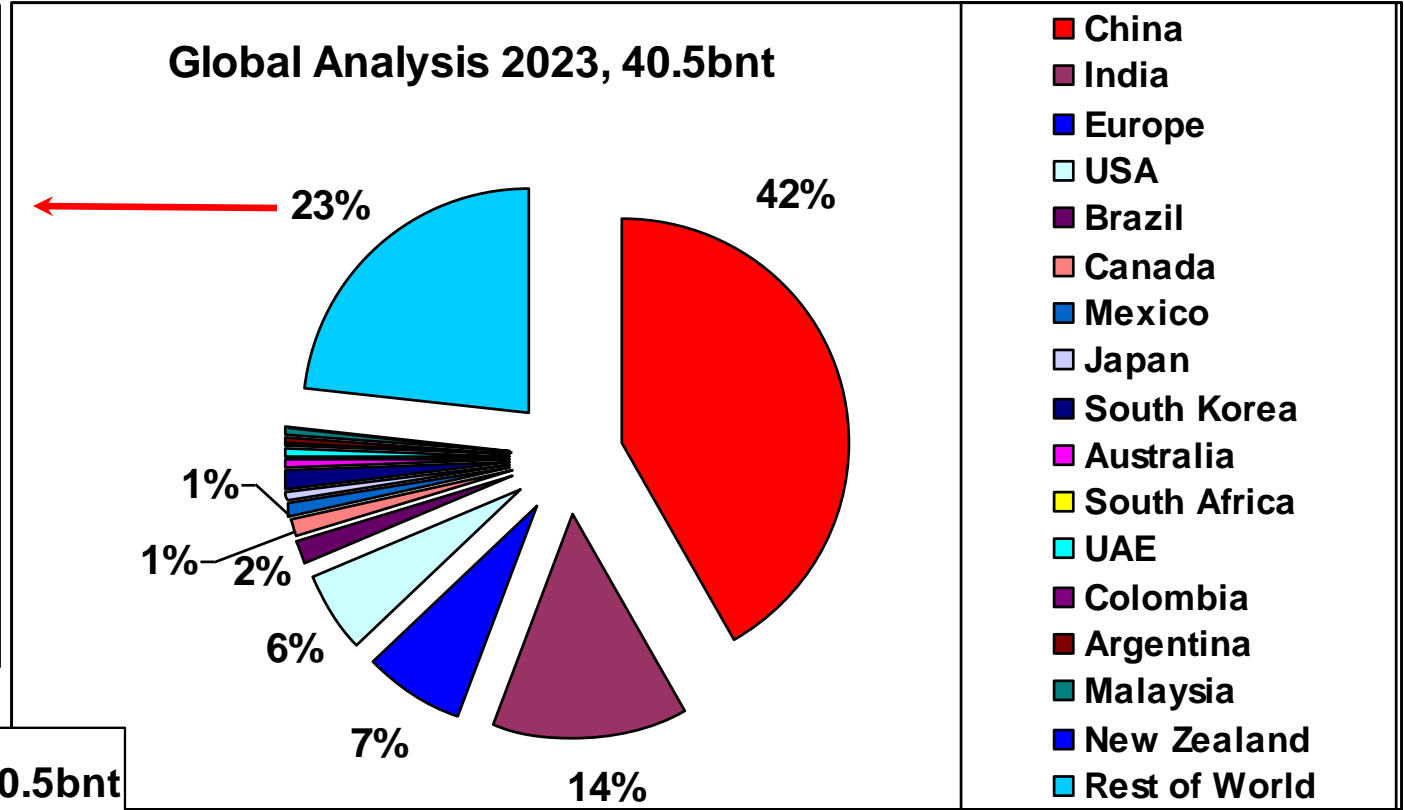
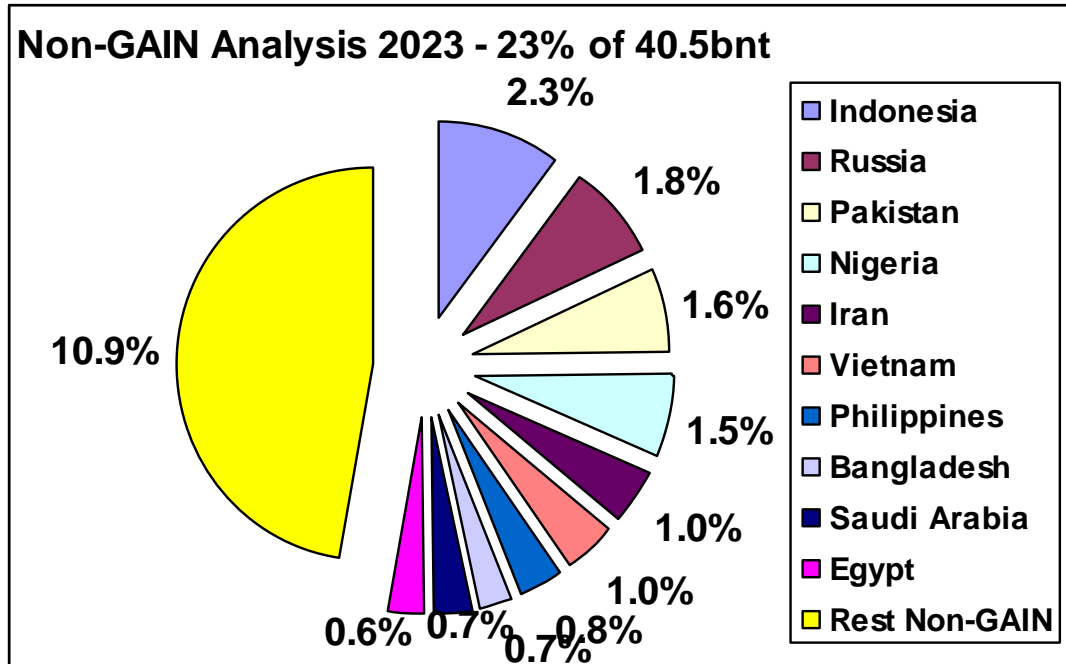
Production in Tonnes/Capita, 2023



In terms of production tonnes/capita

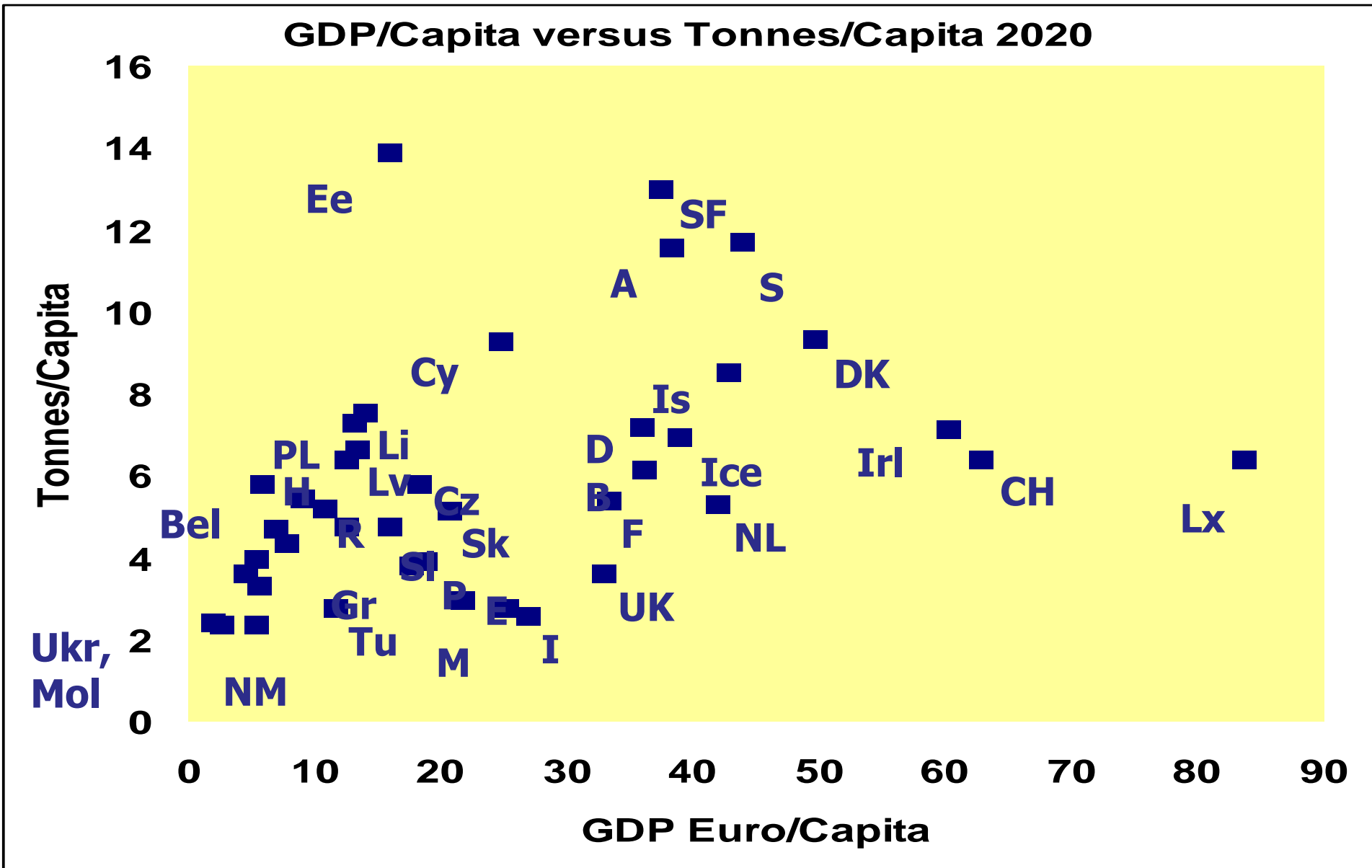
- China is now at more reasonable ~12t/c
- Advanced economies vary ~7-12t/c
- Europe at ~5.5t/c, global average at 5t/c
- Developing regions vary from ~5t/c down to 1.6t/c, all these with significant potential for growth!

GLOBAL PRODUCTION BY REGION AND TYPE



- Graphs show GAIN breakdown by region (above)
- Non-GAIN breakdown by region (upper left)
- Approx breakdown by aggregate type (lower left)

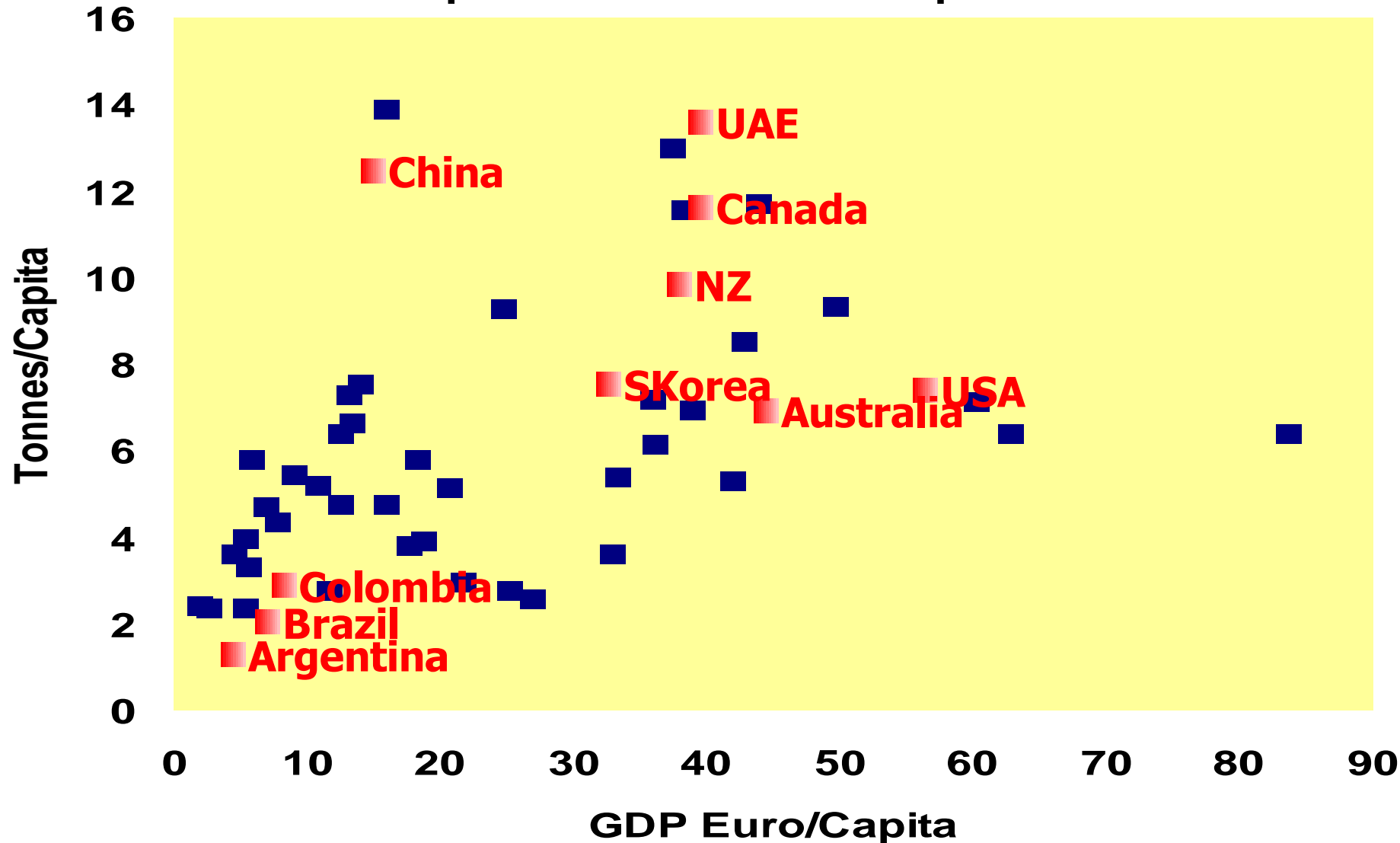
EUROPE – RELATING GDP/C AND TONNES/C



- Blue dots represent that data for the various countries in Europe
- The red curve is the best-fit trend
- It is clear that t/c increase as GDP/c increases
- And that economic growth drives higher t/c!

GAIN - RELATING GDP/C AND TONNES/C

GDP/Capita versus Tonnes/Capita 2020

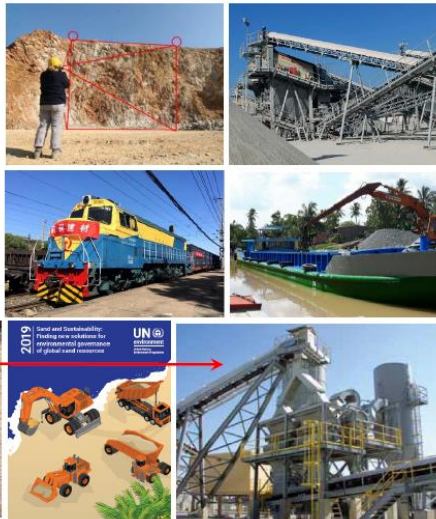


- The red dots represent the GAIN countries
- The graph demonstrates the differences between developed and developing regions
- Huge potential in the developing regions!

SOME THINGS WE'VE LEARNED AND ACHIEVED..

GAIN Lesson #1: Plan for the Future!

- Plan Access to resources for next 20-30 years
- Optimise transport to the market, ideally by water or rail
- Optimise process and products to "Industry 4.0" (<5kWh/ton, <5kgCO₂/ton)
- Phase out illegal quarrying!
- Substitute manufactured sand for natural sand (M-Sand)



GAIN 2020 # 1 Success – Fighting COVID-19!



- We shared vitally-important best practices on COVID-19 during the early lockdown periods
- Industry learned how to safely work through the crisis – and improve!
- A spectacular success!

GAIN Lesson #2: Excellence in Sustainability!

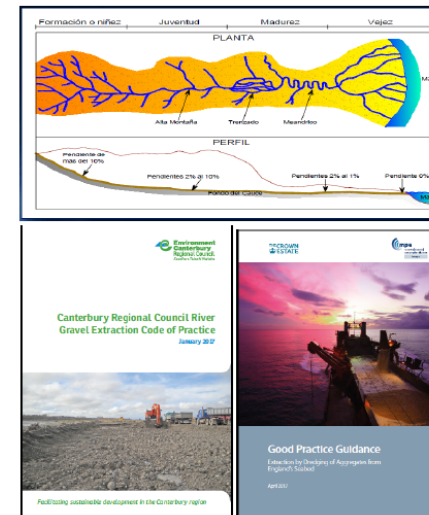
- Achieve zero fatalities, zero injuries, zero harm
- COVID-19 Safe!**
- Minimise dust emissions
- Minimise water usage
- Recycle where viable
- Foster Biodiversity!



#2 Success - Best Practice in River Extraction

- We exchanged best practices in River Extraction from:
 - Colombia
 - China
 - India
 - Malaysia
 - New Zealand
 - UK (as marine aggregates)
 - United States
 - Canada (Alberta)

- Requires detailed hydrological study and monitoring
- Very helpful to GAIN members in responsible river extraction, a very important activity in several countries.....

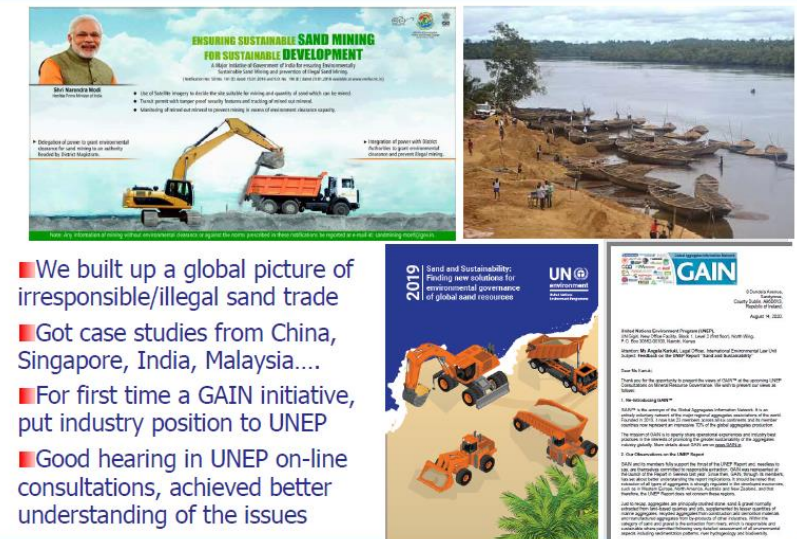


GAIN Lesson #3: Public Relations/Lobbying!

- It is absolutely necessary to promote a **better image** of the industry!
- Work closely** with Governments, Permitting Authorities, Neighbours, Local Communities, Green Groups, Schools...
- Defend the legitimate interests** of the responsible Aggregates Industry!
- Lobby Authorities** to promote the development of Infrastructure
- Work with GAIN Colleagues** to be a highly respected Industry Voice globally!



#3 Success – UNEP & Irresponsible Extraction



- We built up a global picture of irresponsible/illegal sand trade
- Got case studies from China, Singapore, India, Malaysia....
- For first time a GAIN initiative, put industry position to UNEP
- Good hearing in UNEP on-line consultations, achieved better understanding of the issues

GAIN/UEPG VISIT TO SEOUL, SOUTH KOREA



- Korea Aggregates Association (AAK) invited to GAIN/UEPG Team to share Best Practices in Seoul on November 14-18, 2022
- Team included Antonis, Cesar, Jaume, Steffan (and Mark Russell remotely)
- Series of presentations on quality assurance, planning, permitting, restoration and public relations, also on marine aggregates
- Extraordinarily warm welcome, both sides learned a lot
- Unlocking new potential of GAIN, providing support to its members!



ASOGRAVAS CONFERENCE, CALI, COLOMBIA



- Sixth National Meeting of the Colombian Aggregates Industry
- Held in Cali (SW - Pacific Region) on September 7-9, 2022
- Approx 500 delegates, major machinery exhibition
- Buoyant economic outlook under new President, Gustavo Petro
- Major infrastructural development, with double-digit growth
- GAIN presence welcomed, gave keynote speech
- Big focus on cost inflation, even tougher with currency decline

GAIN DRIVES MITIGATION AND ADAPTATION...

- Mitigation applies to all emissions, noise, dust, transport – and CO₂ (<5kgCO₂/ton) – where it makes economic sense to do so!
- Adaptation to climate change is creating positive opportunities!
- Industry is also playing a very important role in fostering biodiversity
- Industry creates and supports circular economy - and societal well-being!



GROWING GAIN MEMBERSHIP....



- Immense potential to grow GAIN further (9bnt, 3.4bn people)!
- Challenge is that in developing regions, associations are not yet established, aggregates tends to be an informal sector
- Need to spread the GAIN success story – articles in newsletters!

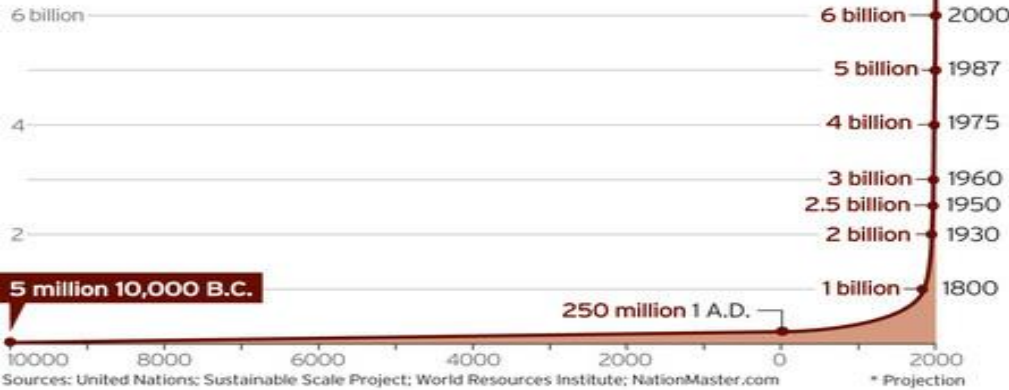
Growth Regions for GAIN:

- **Latin America** – will be focus of Argentina Meeting in 2024
- **SE Asia**, particularly, Vietnam, Thailand, Indonesia, reconnect with Japan!
- **Africa** – several enquiries of interest, greatest potential North Africa, Nigeria
- **Mid-East** – Saudi Arabia
- **Central Asia** Republics

THE GAIN CHRYSTAL BALL TO 2030....

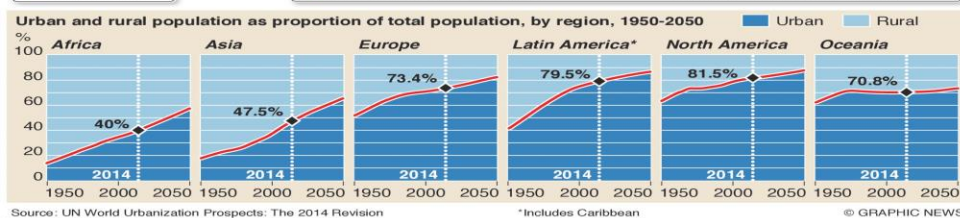
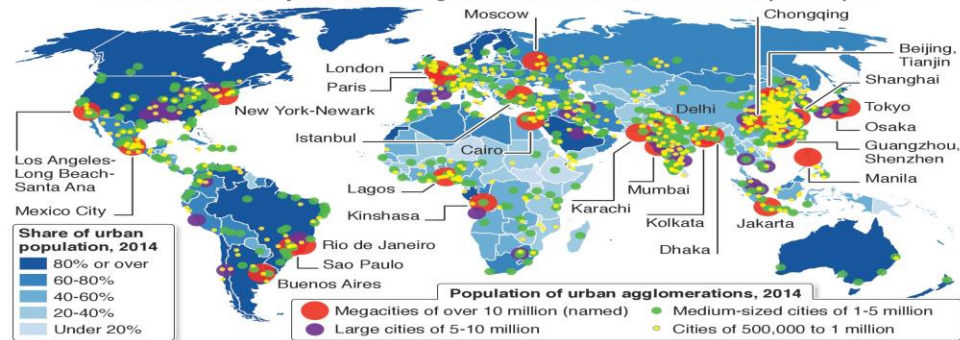
World population growth

Fertility rates are declining, the United Nations says, but not fast enough to stop population growth. The U.N.'s medium-level projection is for the world's population to reach 9.2 billion by 2050 but still more than 3 billion higher since the turn of the century. Population activists say that's too much for the world to handle.



UN finds more than half of people now live in cities

More than half of the global population currently lives in urban areas, with that proportion projected to reach two-thirds by 2050, according to the UN World Urbanization Prospects report



Positive Drivers:

- Global population: 8bn in 2023, likely 8.7bn in 2030, growing by 80m per year!
- Urbanization growing at 0.4%/year especially in Asia, reaching 60% by 2030...
- Aggregates demands driven by energy, food and water shortages and by climate adaptation

Negative Aspects:

- War in Ukraine and geopolitical tensions in other regions are slowing growth and creating uncertainty
- COVID legacy is still impacting supply chains, slowing energy transition, causing high inflation, adding to social unrest
- Excessively green policies!

Outlook to 2030:

- Optimistic that positives will outpace negatives by 2025, leading to global growth to 2030!
- If so, and if China maintains stability in its demand, global aggregates demand could reach 45-50bnt by 2030!
- *Aggregates are absolutely essential to society!*



***Thank
You!***

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