Young Chemists for Sustainability

A global, collaborative effort







Awards



Campaigns

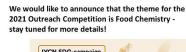


Sustainable Development

Contests

#IYCNOutreach #competition #foodchemistry

#chemistry #outreach #experiments







Goals Campaign

Discussions



Lectures





Who am I?

Emiel Dobbelaar





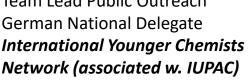


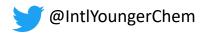






Executive Board Team Lead Public Outreach German National Delegate Network (associated w. IUPAC)







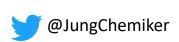
PhD Student Inorganic Chemistry Prof. H.-J. Krüger, PhD TU Kaiserslautern **Germany**



Electric Properties

Bioinorganic Chemistry







JCF Team Sustainability

Est. 2020







Sustainability Guidelines for Young Chemist Networks
Available in >10 languages | contact us if yours is missing!



Sustainable Development - Young chemists' expectations of the chemical sector. Opinions that matter. E. Cotolobar**, C. Gentliber*, J. Richter**, A. Chimer* Introduction

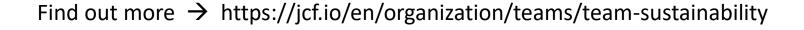
When it corres to advancing sustainable development, UN Sustainable Development "Browns sustainable consumption and production patterns" sets a clear framework for orders many another points for the Americal sector to service on "I When it comes to import of the many another points for the Americal sector to service on "I When it comes to order and its sub-goals, the commitment of the chemical industry is the most demanded and a Server though project offset do not reside that the thinking is ubsigatious and fines a significant of the sector of the chemical sector of the sector of the sector of the chemical sector of the se



White Paper "Sustainable Development - Young Chemists'
Expectations of the Chemical Sector" (in progress)

Expectations | Product Development | Education | Implementation

Survey "Sustainability in Chemical Education" Global Young Chemists Survey





International Sustainability Guidelines for Young Chemist Networks





Double blind reviewed

German English

Portuguese (Portugal)

Portuguese (Brazil)

French Italian

italian

Spanish Russian

Greek

Croatian

Serbian Malay

Vietnamese

Dutch (Netherlands)
Dutch (Belgium)

Single translations

Swedish Afrikaans

Chinese (Mandarin)

Hungarian

Hindi

Punjabi

Bengali

Ukrainian





supported by multiple national young chemists organizations



International Sustainability Guidelines for Young Chemist Networks









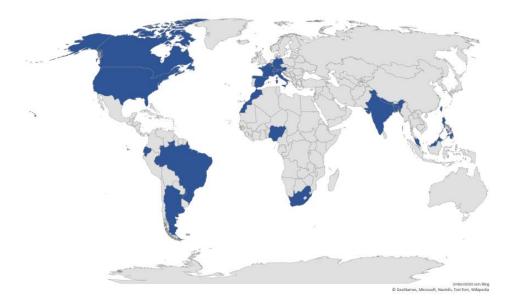
Sustainable Development - Young Chemists' Expectations of the Chemical Sector











Germany	(16)	Nepal	(1)
Philippines	(12)	Canada	(1)
France	(7)	USA	(1)
Belgium	(3)	Switzerland	(1)
Singapore	(2)	Malaysia	(1)
Austria	(2)	Argentina	(1)
Italy	(2)	Ecuador	(1)
Nigeria	(2)	Brazil	(1)
Morocco	(2)	Taiwan	(1)
South Africa	a (1)	India	(1)
Spain	(1)	Bangladesh	(1)

61 full text responses from 22 countries

1. Expectations towards the role and responsibility of the chemical sector?



- Driving force of the future of the industry is a strong commitment to SDG 12
- Move from linearity to circularity
- **Cooperate with**



- a) Authorities
- Set global policy framework for sustainable development
- **b) Other Sectors** Lead the transition promote SDGs beyond chemistry
- c) Civil Society

Foster trust, promote a positive image for chemistry

2. What kind of products and processes are needed to shape a sustainable future?



- 1) Reuse, repurpose, recycle ensure the future of resources
- 2) Bio-based and modular solutions for a zero-waste economy
- 3) Sustainable packaging materials tackle everyday issues
- 4) Sustainable processes inspired by nature mild, energy efficient production
- 5) Decouple growth from production volume tailor made solutions & service

2. What kind of products and processes are needed to shape a sustainable future?



Regional differences

Asia & Africa

- affordable fertilizers with less environmental impact
- sustainable energy and clean water
- innovations for the provision of basic needs and socially equitable products

Europe & Americas

- advanced technologies (e.g. robotics, mimic simulations, nanomedical devices)
- digitalization processes

3. What needs to be changed in chemical science and education?



- 1) Teach ethical principles with the same relevance as personal and lab safety
- 2) Prepare young chemists to find the solutions the world needs
 - → We need environmental, green & sustainable chemistry in education!
- 3) Lay the groundwork in school paint a positive image early, communicate societal relevance of chemistry
- 4) Utilize modern visualization methods for abstract topics
 - → We need to update chemical education to the 21st century!

4. How can politics and industry support the realization of the expectations of the youth?



- 1) Support education and research to speed up sustainable solutions
- 2) Pro planet regulatory framework for the benefit of the people
- 3) Encourage innovation for a circular economy
- 4) Ensure honest commitment with an independent overseer
- 5) Integrate civil society efforts in the decision-making process
- 6) Enhance the communication of politics and science

4. How can politics and industry support the realization of the expectations of the youth?



Tools to drive the realization – Take up responsibility

Politics: Steer the transformation (incentives, subsidies, sanctions)

Industry: Lead by example (rapid action, honest commitment)

Both:

- Ensure public <u>trust</u> with transparency & open communication
- Invest in education to tackle the challenges
- Cooperate with civil society, all sectors and authorities

Sustainability in Chemical Education

- A Global Young Chemists' Survey -









Who Participated?









Number of Participants

Age of the Participants

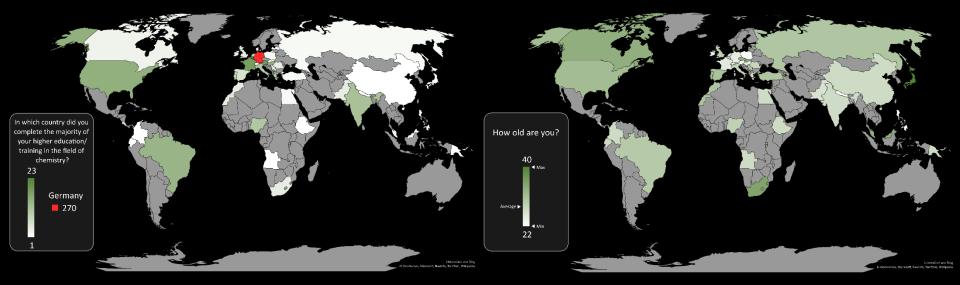


Fig. 1 – Participation Around the World.

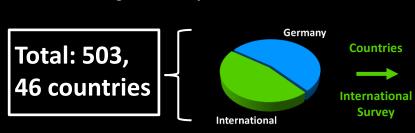


Fig. 3 – German vs. International Participation.

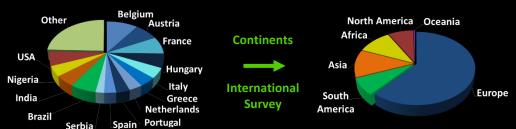


Fig. 4 – Countries (International). (Other = Less than 5 responses)

Fig. 2 – Age of the Participants.

Fig. 5 – Continents (International).

Where are we standing?









1. Adequacy of Sustainable Chemistry in Education

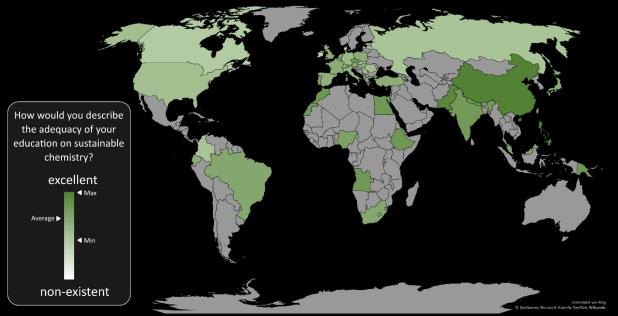


Fig. 6 – Mean values for countries around the world.

Check Fig. 7 if countries are representative (more than 5 participants per country).



Fig. 7 – Countries with more than 5 respondents.

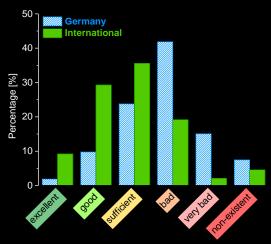
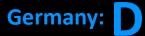


Fig. 8 – Individual opinions: Educational adequacy?

average grade

International:





2. Gain of Sustainability Skills for Industry

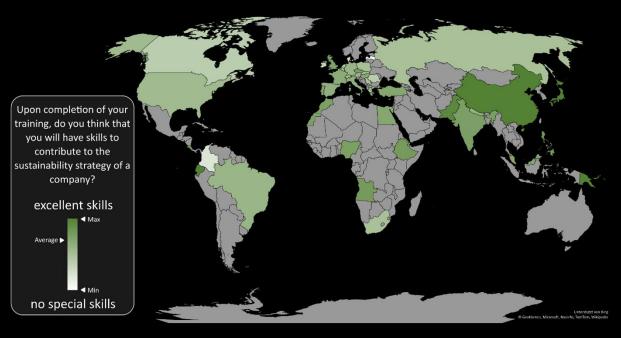


Fig. 9 – Mean values for countries around the world.

Check Fig. 10 if countries are representative (more than 5 participants per country).



Fig. 10 - Countries with more than 5 respondents.

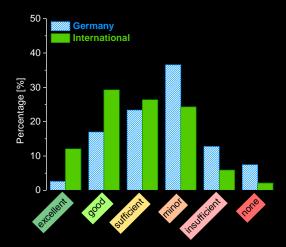


Fig. 11 – Individual opinions: Gain of sustainability skills?

not satisfied

International: >30% Germany: >50%

What about the future?









3. More Sustainable Chemistry in Future Education?

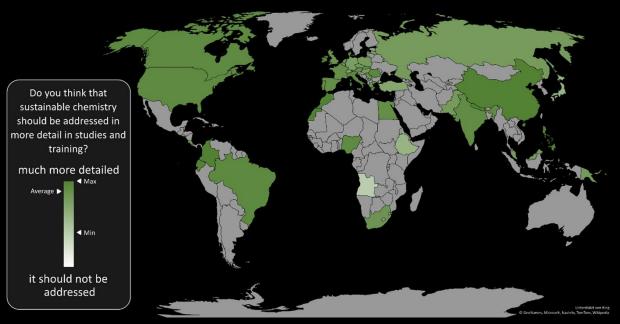


Fig. 12 – Mean values for countries around the world.

Check Fig. 13 if countries are representative (more than 5 participants per country).



Fig. 13 - Countries with more than 5 respondents.

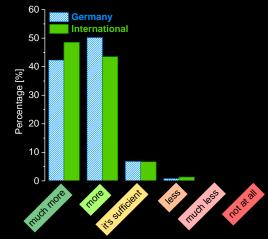


Fig. 14 – Individual opinions: More or less detailed?

more detailed International: >90% Germany: >90%

4. Relevance of Sustainability When Choosing a Career



Fig. 15 – Mean values for countries around the world. Check Fig. 16 if countries are representative (more than 5 participants per country).



Fig. 16 - Countries with more than 5 respondents.

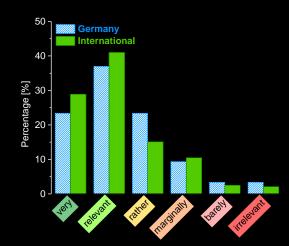


Fig. 17 – Individual opinions: Relevant for carreer choice?

more relevant International: >80% Germany: >80%

Acknowledgements



Chris Heintz
Co-Leader JCF Team Sustainability
JCF Federal Board Member

Alexander Haag

Janine Richter

Carsten Dingler

Sophie Banke

Maximilian Menche

Alena Neudert

Marilia Valli

JCF Team Sustainability

European Young Chemists Network

International Younger Chemists Network



UN SDGs for the Benefit of Society







Confirmed Speakers

- Luc Allemand International Year of Basic Sciences for Sus. Dev. 2022 | Afriscitech
- Brenda Koekkoek Strategic Approach to International Chemicals Management
- Anindita Bhadra Global Young Academy

Open slots for oral talks

 We encourage people to submit abstracts highlighting their work on the SDGs for the betterment of society under the Chemistry for Society theme.

Abstract submission deadline: March 16th

http://bit.ly/UN_SDGs_Society

IYCNs UN SDG Campaign



Share your story

- Show the world how you as a young chemist are contributing
- Fill out the survey to share your contribution







http://bit.ly/2KoLMJW

Thank you for your attention!





