



**SUSTAINABLE
RECYCLING
INDUSTRIES**

Sustainable solutions for hazardous fractions in Ghana at the Nexus of Up-Cycling and Co-Processing

Workshop at the World Resources Forum 2021

Chair: Dr. Samspon Atiemo, Presentation: Letitia Nyaaba,

Co-Moderation: Tobias Schleicher

13 October 2021, 1:30 - 2:20 pm (GMT, Ghana), 3:30 - 4:20 pm (GMT+2, Mid Europe)



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Empa

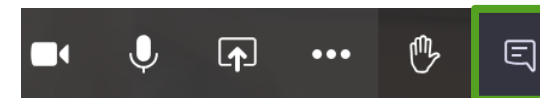
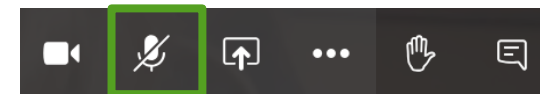
Materials Science and Technology



**WORLD
RESOURCES
FORUM**

Recap of Guidance for the Online Platform

- ▶ Moderation: The session is moderated by Dr. Atiemo and Tobias Schleicher
- ▶ Facilitation: Technical facilitation is provided by the SRI Team
- ▶ Webcam: Turn off to save bandwidth.
- ▶ Micro: Mute throughout the meeting.
Unmute only when the moderator has invited you to speak.
Be careful not to interrupt others when they're speaking.
- ▶ If you wish to speak:
Raise your hand with the symbol in the control bar
- ▶ If it is your turn to speak: Avoid background noise, e.g. by shuffling papers, eating, or typing loudly on your computer.
- ▶ If you wish to comment directly: you might use the chat function



Introduction to the SRI project in Ghana: Highlights SRI Phase I (2015-2018)



The general set-up of the project

- ▶ Outcome 1: Policy Support
- ▶ Outcome 2: Normative Requirements
- ▶ **Outcome 3: Business Models & Financial Mechanisms** (e.g. support implementation of scheme of Extended Producer Responsibility Scheme; still no convincing business case for sound e-waste recycling and informal backyard recycling still more profitable).
- ▶ **Outcome 4: Hazardous Waste** (apart from e-waste, authorities, industries and society are challenged with various other waste problems, such as **car tyre burning**, pollution of steel smelters...).

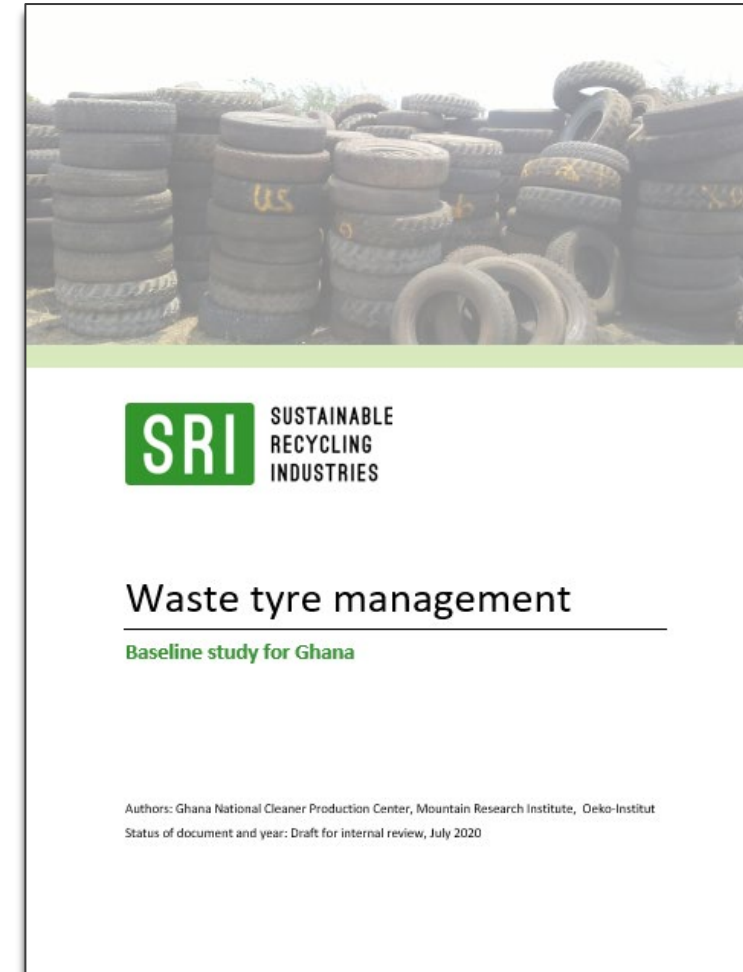


Focus on Waste Tyres - A lot of pollution for little money



Baseline Assessment for waste tyres in Ghana

- ▶ New Publication of **Baseline Assessment Report**
- ▶ The project team analysed...
 - ▶ Technically available options for environmentally sound management of waste tyres
 - ▶ Current status and regulatory framework of waste tyre collection and management in Ghana
 - ▶ Lessons learnt from waste tyre recycling in other countries
- ▶ Assessment of the Ghanaian cement industry regarding their technical and environmental suitability to use *tires* and e-waste plastics as an alternative fuel (together with our expert Ed Verhamme)
- ▶ <https://www.sustainable-recycling.org/reports/waste-tyre-management-baseline-study-for-ghana/>



Waste tyre generation per year in Ghana

► For 2019, the amount of waste tyres was estimated to sum up to **106,779 - 147,398** tonnes.

Type of vehicle	Devices in use [1000 units]	Average weight of tyres[kg]	Tyres per vehicle [No.]	Average lifetime of new tyres [a]	Average lifetime of used tyres [a]	Waste tyre generation minimum [t/a]	Waste tyre generation Maximum [t/a]
Passenger cars	715	7	4	3-4	1.5 - 2	8,759	11,678
Commercial vehicles	377	40	6	0.5 - 0.75	0.75 - 1	98,020	135,720
Total						106,779	147,398

Collection & management of waste tyres in Ghana

Upcycling: Furniture, playgrounds, etc.

Waste Hierachy

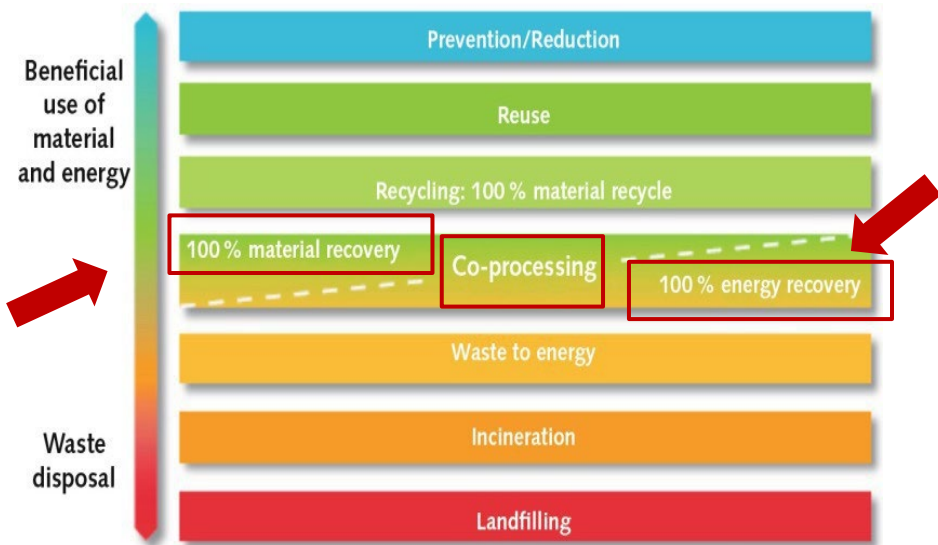


SRI facilitated the formation of the new USED TYRES UPCYCLING ASSOCIATION (UTUA).

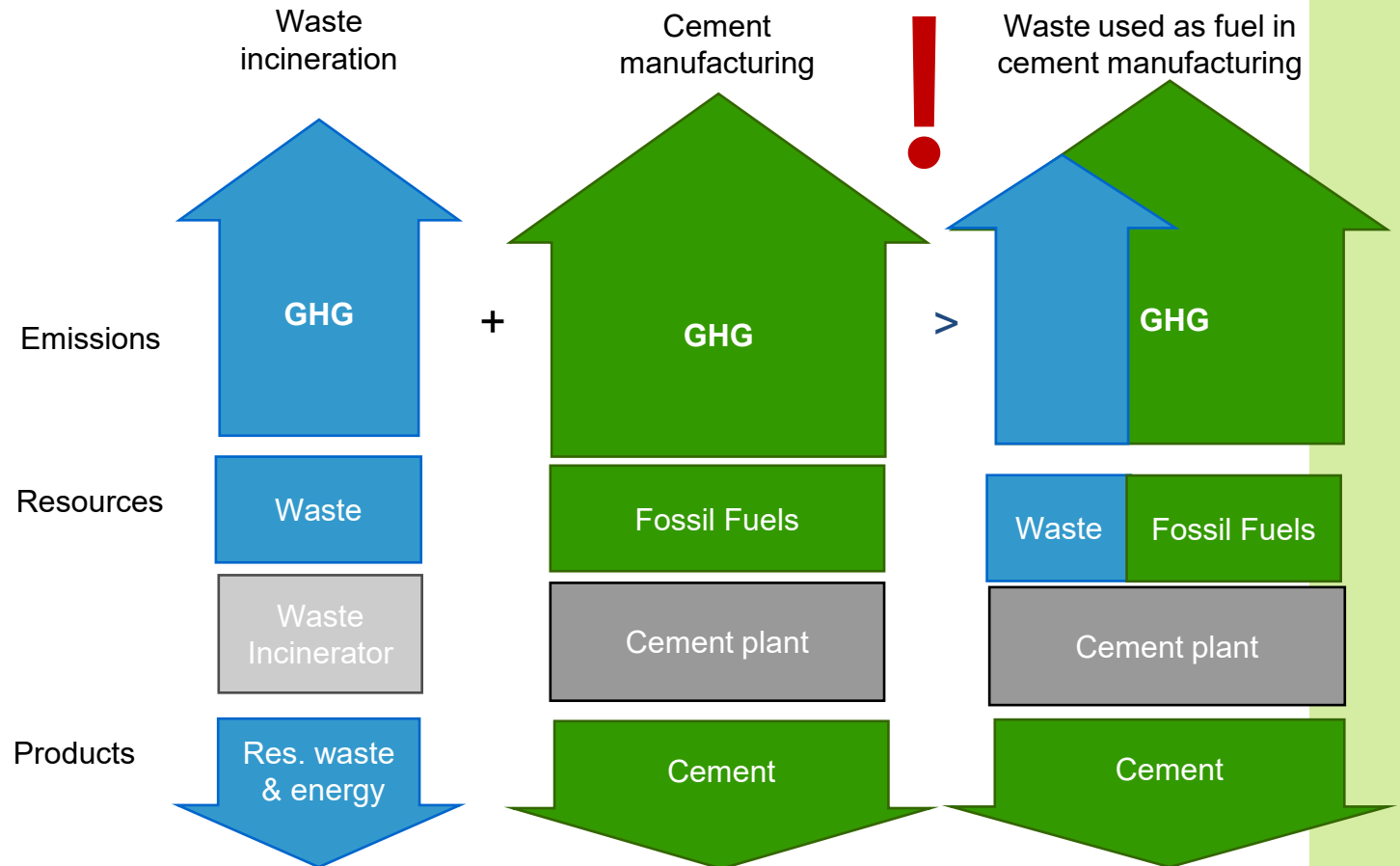
Collection & management of waste tyres in Ghana

Co-Processing: Using waste materials (e.g.waste tyres) as alternative fuel in the cement industry instead of fossil fuels

Waste Hierachy



SRI has started a promising cooperation on co-processing with Savannah Diamond Ltd.



Overall, Green House Gas (GHG) emissions are reduced when replacing fossil fuels by wastes!

POLL



- (1) What are sustainable solutions for waste tyres (and other hazardous fractions such as e-waste plastics, pesticides etc.) from your experience? What is needed to implement the solution?
- (2) What are typical barriers for upcycling and co-processing of waste fractions from your experience?

www.menti.com and please enter the code: **72339268**

PANEL DISCUSSION



▶ Matilda Payne Boakye-Ansah (UTUA)

- ▶ What does UTUA stand for and when has it been founded and why?
- ▶ What are your member companies doing? What kind of products are up-cycled? Where do they market the products?
- ▶ What are typical problems and barriers for the upcycling business of tires in Ghana?
- ▶ What would you wish for the future? From whom?



PANEL DISCUSSION



▶ Ed Verhamme (ARP)

- ▶ What actually is co-processing? In which industries can it be applied?
- ▶ What kind of waste streams are typically used for co-processing in the cement industry?
- ▶ What are the big environmental and economic benefits of co-processing from the perspective of the companies and the whole countries?
- ▶ What are typical barriers for co-processing do you see in terms of technologies and costs?
- ▶ What are typical experiences you've made with co-processing in other countries?
- ▶ If you had one wish for Ghana, what would it be?

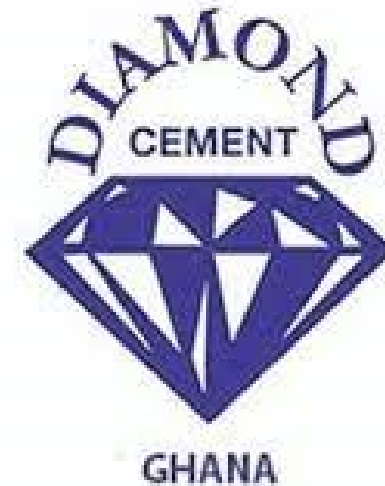
alternate resource
partners
+



PANEL DISCUSSION



- ▶ **Mr. Babu and Mr. Reddy (Savannah Diamond Ltd.)**
 - ▶ You recently started a cooperation with the Ghana SRI project on researching for co-processing in your facility? What was your motivation to do so?
 - ▶ Did you heard about co-processing before and do you know other kilns that already practice co-processing of waste tires and/or other hazardous fractions in a cement kiln (e.g. in India)?
 - ▶ Without any commitments, could you imagine trying co-processing in your kiln as well? What would be pre-conditions for you (delivery of waste tires, shredded or complete waste tires, delivery infrastructure...)?
 - ▶ If you had free wish on recycling and co-processing in Ghana, what would it be?



PANEL DISCUSSION



- ▶ **Mr. Ebenezer K. Appah-Sampong, Deputy Executive Director in charge of Technical Services, Environmental Protection Agency Ghana**
 - ▶ Has EPA Ghana already considered co-processing as a possible solution for used tyres in Ghana?
 - ▶ Why did EPA think in this direction?
 - ▶ What are barriers for co-processing from the Ghanaian perspective (legislative, etc.)?
 - ▶ What would be required to pave the way towards co-processing from the perspective of the regulators in Ghana?
 - ▶ In what context do you see the up-cycling activities by UTUA? Could you consider linking the activities of UTUA to Act 917?



OPEN DISCUSSION



- ▶ In order to get upcycling activities out of a niche, the innovative activities should be strategically supported financially (such as through the connection to the EPR scheme according to Act 917) to allow for more economic business models.
- ▶ As in the short and medium run (resp. at all), it is not very likely that all tyres will be upcycled, fossil fuel substitution in the cement industry in Ghana has the potential to (1) find a solution for a actually hazardous fraction (tyres are burnt) and (2) save CO2 emissions in total.

On behalf of the full SRI Ghana team...



**THANK YOU VERY MUCH
FOR YOUR KIND
PARTICIPATION**



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