

Newborn intervention and child development

The Burkina Faso-Uganda Saving Brains project
focusing on exclusive breastfeeding

James K Tumwine (for PROMISE Saving Brains study)

Email: kabaleimc@gmail.com

What I am going to say

- Introduction
- EBF
- Saving Brains
- Milestones
- Preliminary Observations
- Conclusions

Heartfelt thanks

- Organizers of IFPE
- All colleagues at GCC for enormous support and encouragement.
- All members of the Saving Brains Community (**Nicolas Meda, Hama Diallo, Anselme Simeon Sanou, Grace Ndeezi, Victoria Nankabirwa, Paul Bangirana, Angelina Kakooza, JB Lwanga, Mary Kwagala, Michael Boivin, Bruno Giordani, Penny Holding, Ingunn Marie Engebretsen, Eseperance Kashala, Torkild Tylleskar et. al** for your support
- PROMISE_EBF/SB community
- All who in one way contributed to this work directly or indirectly

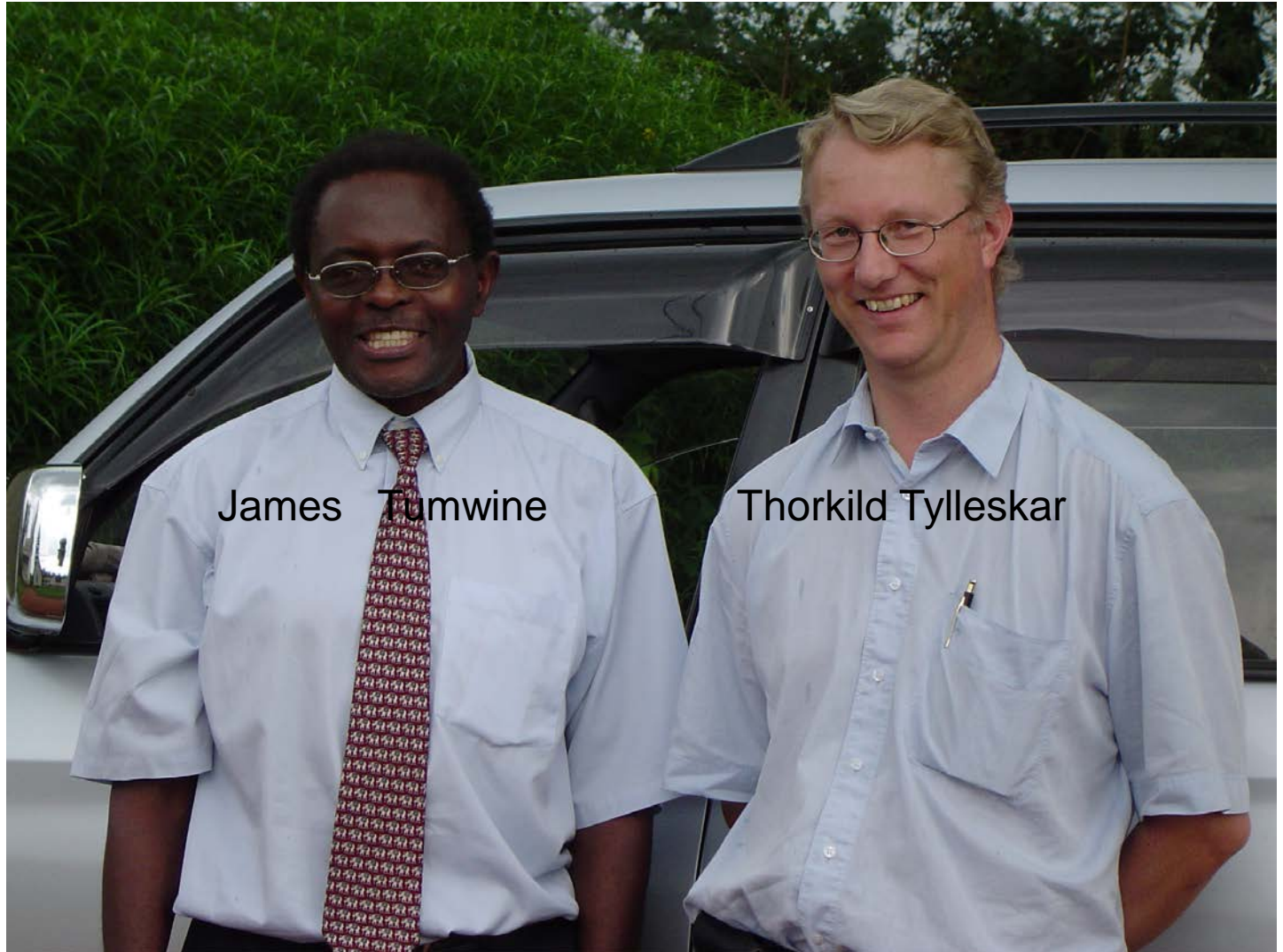
Greetings from Makerere University – Uganda's ivory tower!



Greetings also from Bergen: CIH@UiB!

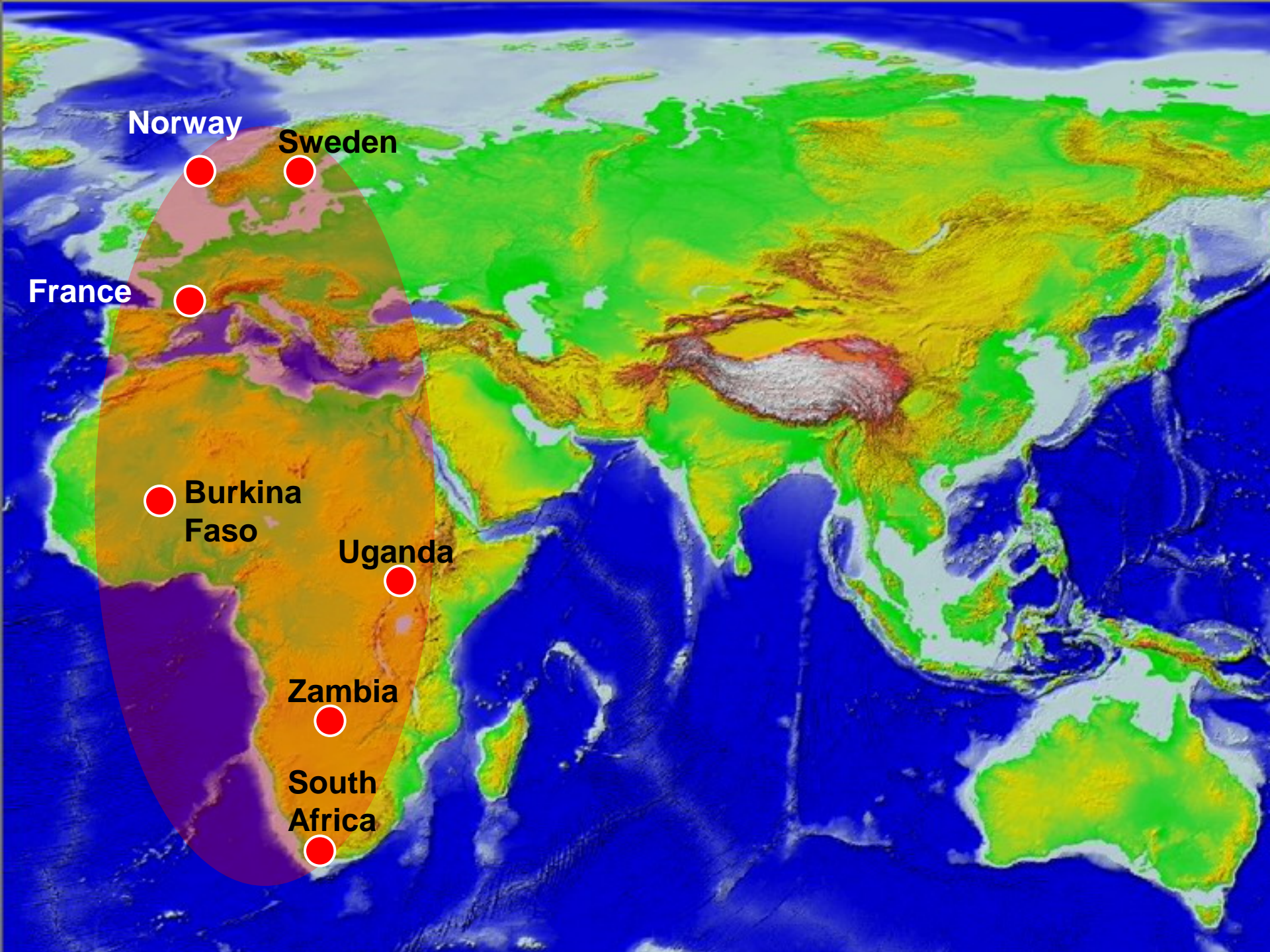


Makerere-Bergen collaboration going strong



James Tumwine

Thorkild Tylleskar



Norway

Sweden

France

Burkina Faso

Uganda

Zambia

South Africa



Burkina Faso

West Africa

Uganda

East Africa

Central Africa

Zambia

Southern Africa

South Africa

PROMISE - EBF

- A cluster randomised study 2006-2008 (PROMISE-EBF)
- Aim: To establish the effect of home-based peer counselling for exclusive breastfeeding (EBF)
- Sites: Uganda, Burkina-Faso and South Africa

Key Results of PROMISE-EBF

- Increase in EBF in Uganda and Burkina-Faso from 40% to 80%

Tylleskar et al, Lancet July 2011;378;420-27

PROMISE-Saving Brains

AIM

To establish the effect of peer counseling for EBF in the first 6 months of life on human capital formation in an African setting

Specific objectives:

- 1. To measure the effect of peer counseling for EBF on human capital formation in Uganda and Burkina-Faso***
- To identify solutions to barriers that limit scale up of peer counseling for EBF in Uganda and Burkina-Faso

Core matrices

1. Height for age (WHO standard) with measure of self-reported puberty for 10-18 years
2. Estimate of general intelligence based on
 - a. Kaufman Assessment Battery for Children
3. Years of school, with indication of school access and, as is feasible, a measure of school quality
4. Indication of literacy
5. Measures of executive function, specifically:
 - a. Working memory,
 - b. Cognitive flexibility,
 - c. Inhibitory control,
 - d. Sustained attention
6. Presence of behavioral and emotional problems and, as is feasible, criminality or its risk factors

Saving the Brain through Breastfeeding



Methods

Participants

- Children from PROMISE-EBF cohort
- Uganda & Burkina Faso sites: At least 70% of original cohort

Data (agreed core matrices)

- Key aspects of human capital formation:
 - Mental health
 - Somatic health
 - Productivity

Three key areas

- **Psychometric testing**
 - KABC II
 - TOVA
 - CCT
- **Clinical assessment**
 - Current and past health status, laboratory tests
- **Household and school visits**
 - Changes in HH economic status, school readiness and attainment

Quality control

- Careful participant tracing and identification to avoid mis-enrolment
- PROMISE -EBF recruiters, evaluators, and data collectors blinded to intervention
- **Reliability/validity**: Ingunn, Victoria, Hama

MILESTONE S (A)

- **Training I : (October 2012)**

Metropole hotel, Kampala.

Investigators, study coordinators

Participants from Uganda, USA, Burkina Faso,
Bergen

- Revision of core matrices
- Practical session on neuro-cognitive tests - KABC II, TOVA, CCT
- Set time line for the project and way forward
- Draft communication strategy
- Defined staffing structure

Participants at the October 2012 workshop, Metropole Hotel, Kampala



Content

Materials

KABC II

Kaufman Assessment Battery for
children II (KABC II) testing kit

Sequential testing/ short term
memory

Simultaneous/ Visual processing

Learning ability

Planning ability

Knowledge ability

TOVA

Computerised TOVA material

Testing omissions/inattention

(Laptop)

Measuring impulsivity

Processing ability

CCT	Children's Category Test for children
Non verbal learning	Level I (5-8yrs) testing kit
Cognitive ability/ Concept formation	
Problem solving	

MILESTONES (B)

- IRB approval (SOMREC & UNCST) December 2012 and April 2013
- Staff recruitment (psychometric, clinical, community teams)
- Training II in Mbale, Uganda – March 2013
(Bruno Giordani et al)
 - Participants from Uganda, Burkina Faso, Bergen , USA
 - Key areas:
 - Core matrices
 - Psychometric testing
 - Anthropometry
 - Revision of study tools
 - Translations

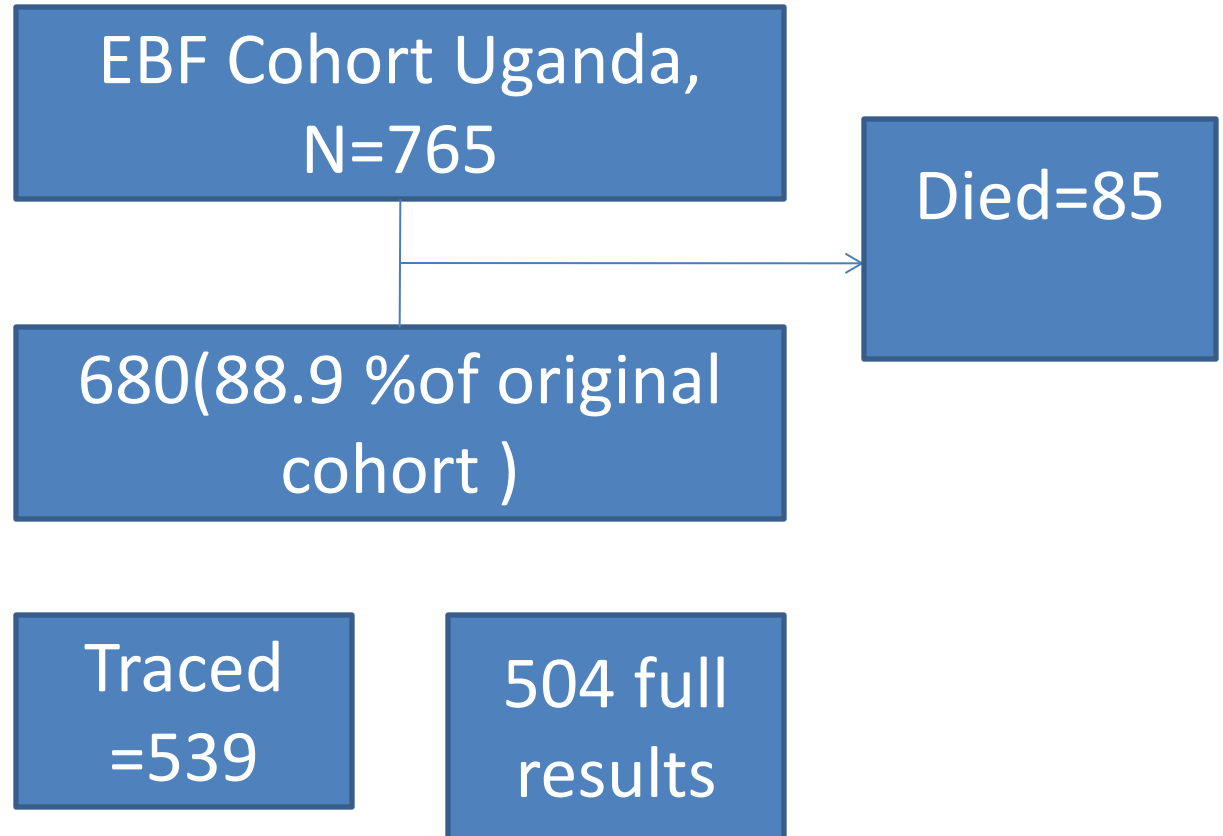
MILESTONES (C)

- Tracing EBF children:
 - Commenced Jan/Feb 2013
- Testing children
- Commenced Early April 2013

MILESTONE (D)

- Data collection completed 30th October 2014
- Data analysis workshop, Kampala February 2015
- To-date: Data cleaning, merging and analysis

Study profile



$539/765 = 70.5\%$ of original cohort
 $539/680 = 79.3\%$ of 'survivors'

Preliminary observations

- About the cohort
 - > 70% of original cohort traced (79% of 'survivors')
 - 504 or 74% of 680 survivors completed all study procedures**

Preliminary observations

Psychometric testing

- Duration of completing tasks
 - KABC: 60 to 90 min
 - TOVA: 20 min (10 min for instructions and 10 min for the test)
 - CCT: 25 min

Preliminary observations

Data collectors experiences

- Tracing: went reasonably well
- Some participants came late so the tasks were completed late

Participants' experiences

- KABC II: Children love the toys and want to walk off with them
- TOVA: Children love the switch but anxious about the unfamiliar computer
- CCT: Children anxious to solve more complex tasks

Table 1: Height for age and school attendance

	Control	Intervention	P-Value
	n (%)	n (%)	
Height for Age			
Stunted	39 (15.9%)	53 (21.1%)	0.131
Not stunted	207 (84.1%)	198 (78.9%)	
Kindergarten attendance			
No	30 (12.1%)	27 (10.6%)	0.778
Yes	213 (86.2%)	225 (88.2%)	
Don't know	4 (1.6%)	3 (1.2%)	
Primary school attendance			
No	108 (43.9%)	110 (43.1%)	0.963
Yes	138 (56.1%)	145 (56.9%)	

Table 2: Schooling and school test

	Control group Mean (std deviation)	Intervention group Mean (std deviation)	Mean difference (std error difference)	95% CI of mean difference	P- Value
Months spent in kindergarten	7.2 (5.6)	6.1 (3.0)	1.07 (0.97)	(0.21, 1.93)	0.015
Months spent in primary school	18.9 (10.2)	15.6 (9.6)	3.34 (1.17)	(1.03, 5.64)	0.005
Grade on age approximate school test (percentage)	80.0 (22.3)	79.5 (21.6)	0.53 (2.81)	(-5.00, 6.06)	0.852

Table 3: Differences in general intelligence and Executive function

	Mean difference (std error difference)	95% CI of mean difference	P- Value
General Intelligence	0.07 (0.09)	(-0.12, 0.25)	0.471
Working memory	0.37 (0.09)	(-0.14, -0.22)	0.686
Cognitive flexibility	-0.07 (0.09)	(-0.12, 1.56)	0.789
Inhibitory control	-0.06 (0.09)	(-0.23, 0.10)	0.459
Sustained attention	0.11 (0.08)	(-0.05, 0.28)	0.184

Table 4: Differences in emotional and behavioral problems

	Mean difference	(95% CI)
Total score	0.04	(-0.8, 0.83)
Sub domains		
Emotional	0.2	(-0.1, 0.5)
Conduct	0.0	(-0.3, 0.2)
Hyperactivity	0.0	(-0.3, 0.3)
Peer problems	-0.1	(-0.3, 0.2)
Pro social	-0.3	(-0.6, 0.0)

Conclusion

- We have successfully completed the project
- Data analysis (UGA/BF): work in progress
- Preliminary results gleaned from the Uganda data **do not show major differences** between intervention and control groups
- Too early to make any definitive conclusions
- South-South, North-South Collaboration can work despite challenges

What I told you

- Introduction
- EBF
- Saving Brains
- Milestones
- Preliminary Observations
- Conclusions

Join me and all my colleagues to

say :

Tusen takk!

