



## Ethiopia – Israel Mentoring to Establish Network of Science Centers in Africa

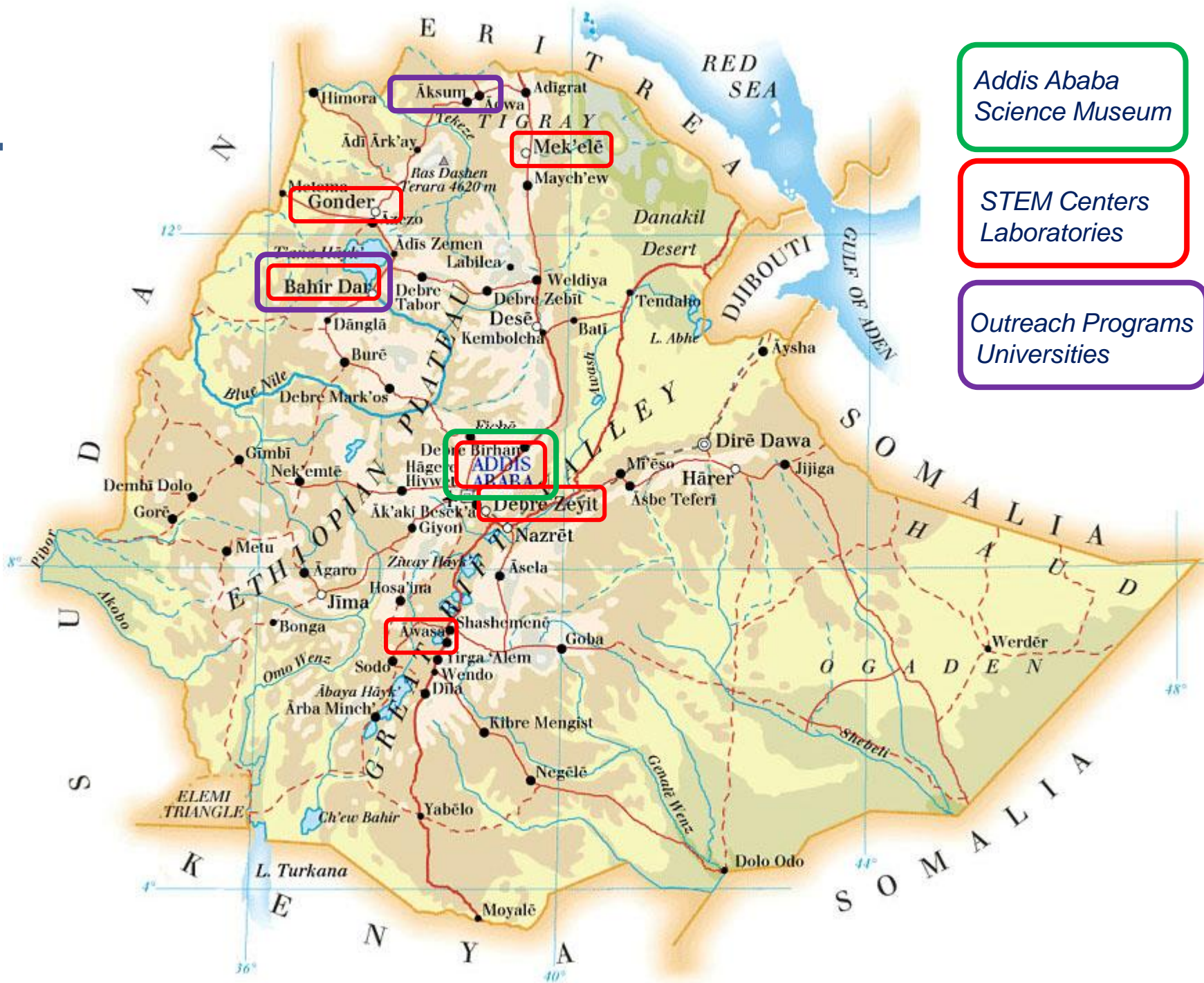


*Dr. Ronen Mir, Israel,*

*Dr. Alemayehu Abera, Ethiopia*

*Mr. Mark Gelfand, USA*

**SCWS 2017**



Addis Ababa  
Science Museum

STEM Centers  
Laboratories

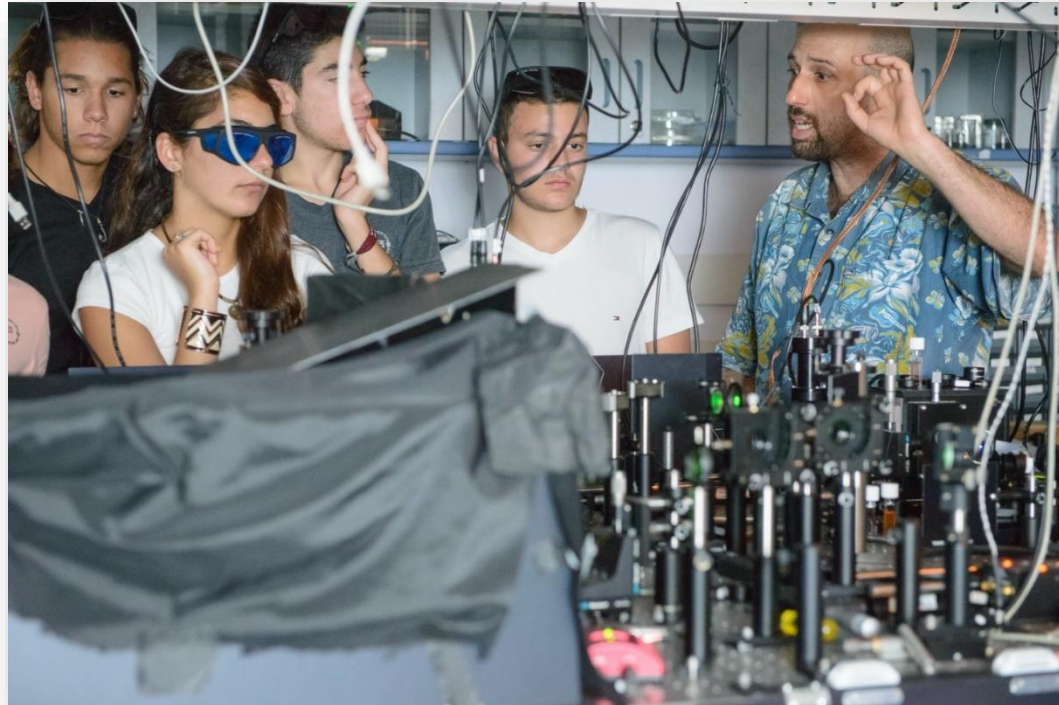
Outreach Programs  
Universities





## The Advent and Development of STEM in Ethiopia and mentoring by Israel

1. Shared Science Campuses
2. STEM Centers
3. Summer outreach programs
4. Science Museums
5. Virtual computing
6. Mobile Lab.
7. STEAM K-12





## Science teaching in a typical school

- Lack of qualified teachers
- Lack of laboratories
- Lack of advanced equipment
- Poor maintenance of scientific equipment
- Lack of interaction among science teachers
- Lack of continuing education for teachers
- ...



## Schwartz/Reisman Science Education Centers

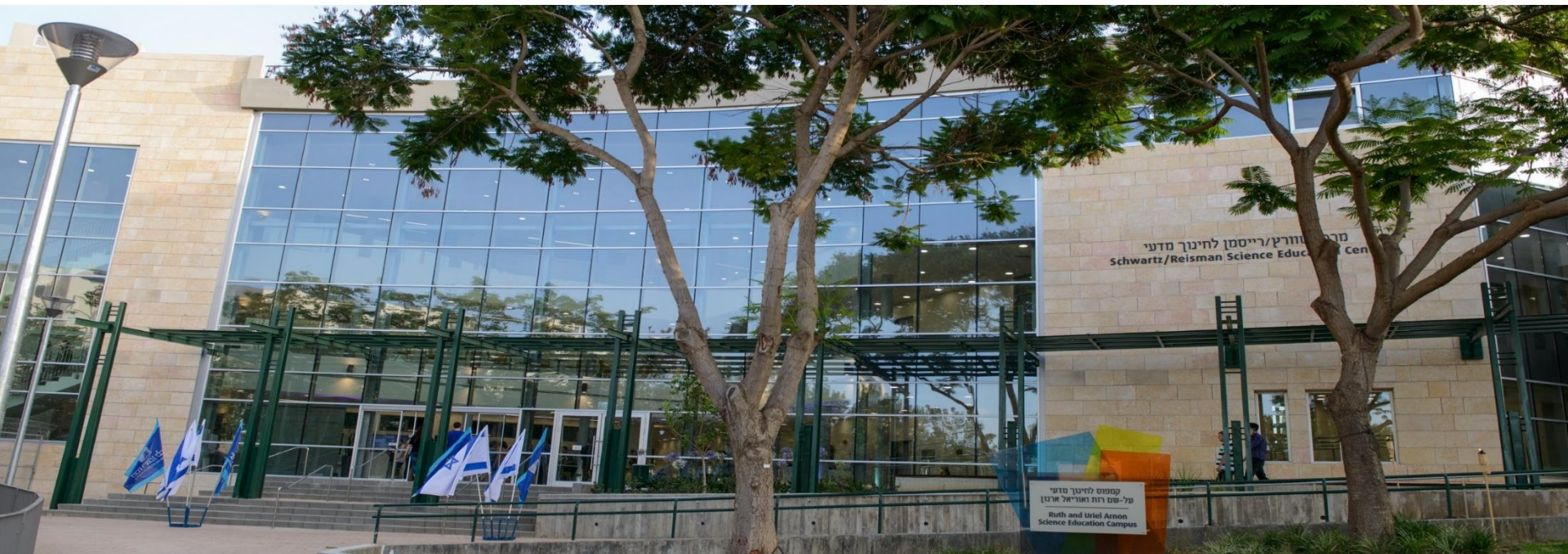
- Highly qualified science teachers (MSc or PhD)
- Teaching in the laboratories
- First class scientific equipment
- Professional maintenance
- Critical mass of interacting teachers
- Weekly seminar/courses for teachers
- ...





## Shared Science Campuses – Ethiopia. Schwartz/Reisman Science Education Cntr - Israel

- Enhanced Physics and Chemistry Learning for 10-12<sup>th</sup> grade students
- Teachers work together, guided by Mentors to develop curriculum and lessons
- Best equipment, lessons based on demonstrations and student experiments
- Prepare **Science experts** and **Science lovers**



**More about Formal - Informal Science**

**Education in:**

**Session D3 tomorrow Nov 16 14:40**



## Impact from the Shared Science Campuses

- 600 students will graduate from these schools each year
- G11 & G12 are expected to volunteer for the summer program at other public schools,
- students from the science schools Volunteer each year in only one region of the country

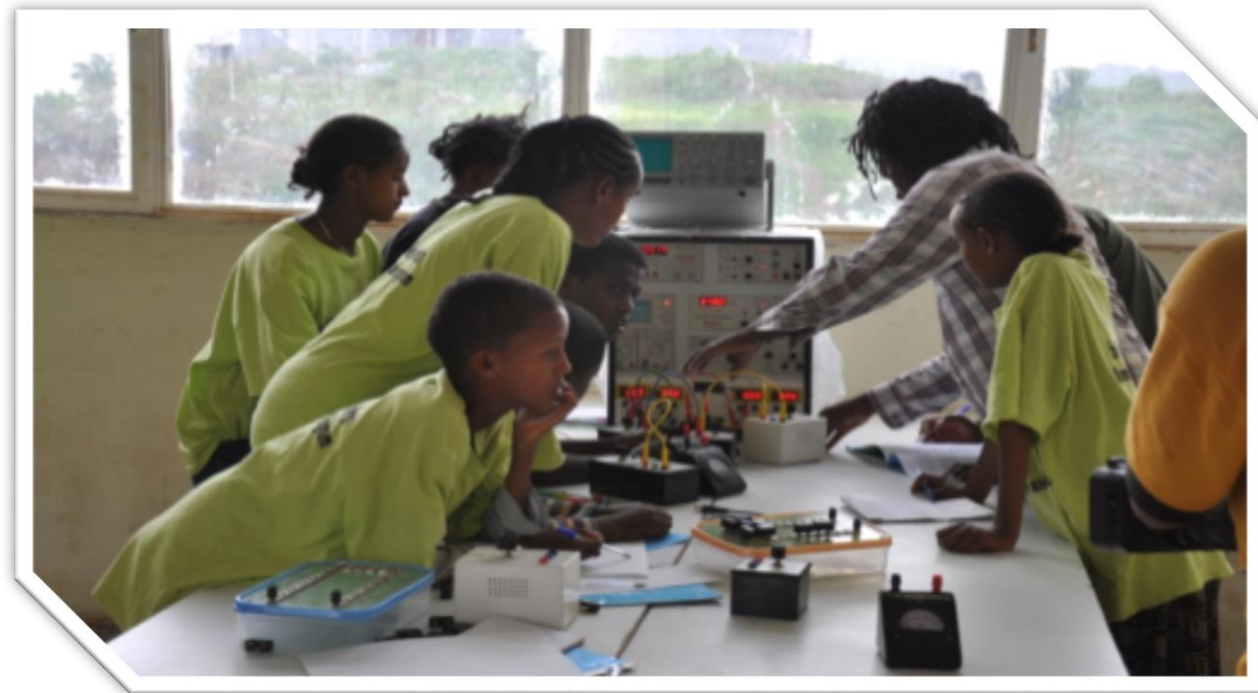






## 2. STEM Centers

- **STEM Centers create an opportunity for students to engage in hands on activities through project work.**
- **Supplement classroom theoretical instruction with practical (laboratory) work for the majority of marginalized school students.**
- **STEM centers are annexed to Science schools with fully equipped laboratories and a workshop for Fabrication Laboratories (Fab Labs).**





## Hawassa STEM center







### 3. Summer outreach programs

- Provide summer hands on training at the universities for 12,000 students from Grade 9-12, from different regions.
- The Teacher class ratio is maintained at 2:1      **(64 teachers from schools)**



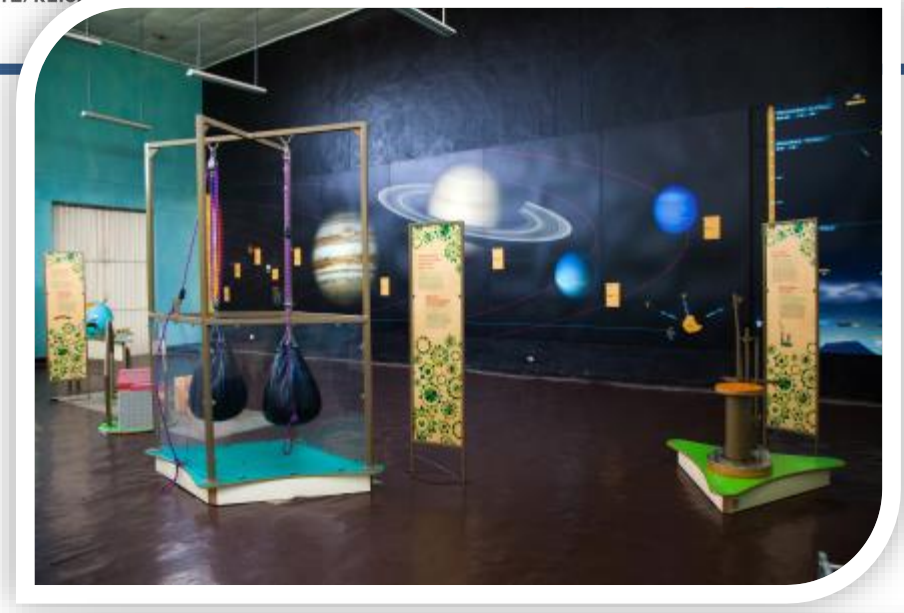


## 4. Science Museums

- The first museum deployed at AASTU in 10 themes totaling 40 exhibits;
- Produced by MadaTech in Israel
- Two more Science Museums to be deployed (Aksum and Mekelle),









## 5. Virtual Computing Lab.







## 6. Mobile Science Lab.

- knowledge and the habit of safety.
- Understanding the particular hazardous characteristics of a chemical that will be used.
- Is it flammable? Is it toxic?
- knowing what to do and what to avoid when a chemical is flammable, corrosive or an irritant.
- knowing what to do in case an accident occurs.
- Safety rules in the science laboratories by teachers and students.





## 7. STEAM K-12

- STEM education in elementary grades creates in students an interest in math and science
- foundation for middle school, high school and beyond...
- Talent corridors:- are special arrangements in a school system which offers a platform to identify, nurture, support talent and giftedness. (MOFET),
- MOFET as a teacher development

**Ethiopian university presidents  
at the Arava Institute,  
Ketora, Israel**

