مركز الشباب العربي
ARAB YOUTH CENTER

مجلس الشباب العربي للتغير المناخي
ARAB YOUTH COUNCIL FOR CLIMATE CHANGE

ARAB YOUTH TOOLKITS

SEEDS OF CHANGE:

A YOUTH ACTION TOOLKIT FOR SUSTAINABLE URBAN FARMING IN THE ARAB REGION

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ACROSS THE ARAB REGION, COMMUNITIES FACE RISING CHALLENGES OF FOOD INSECURITY, CLIMATE CHANGE, AND URBANIZATION

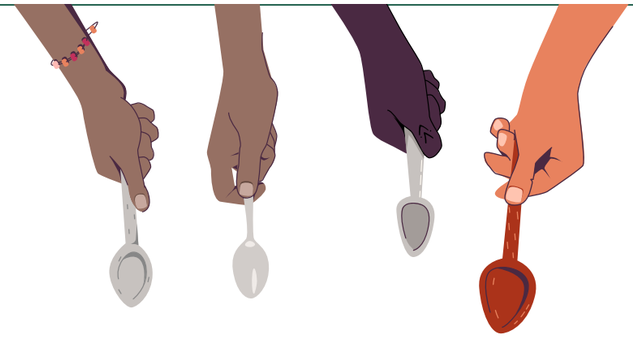
The MENA region is one of the most climate-vulnerable areas in the world. Characterized by arid and semi-arid environments, limited freshwater availability, and high dependence on food imports, the region faces unique challenges that directly link climate change to food insecurity (Greenpeace, 2025).

UN Agencies estimate that over 40 million people in MENA are already experiencing severe food insecurity, a number projected to grow with climate impacts. The MENA region imports over 50% of its food, with several Gulf countries relying up to 90% on food import, making it extremely vulnerable to global market shocks (World Bank, 2024).

Urban populations across the region are expected to double by 2050, increasing pressure on food systems, therefore sustainable agricultural practices must be encouraged and implemented to reduce negative impacts on Arab populations (World Bank).

Average temperatures in the MENA region are increasing at nearly twice the global rate, with projections suggesting a rise of up to 4°C by 2050 if current trends continue (World Bank, 2023). High temperatures impact the following:

- Heat Stress on Crops: Staple crops like wheat, barley, and maize have shown yield declines with every 1°C rise in temperature (Tran et al, 2025).
- Livestock Impacts: Heat reduces livestock fertility and productivity, and increases the risk of disease outbreaks (Khan, 2023).
- Soil Degradation: High temperatures accelerate soil moisture loss and salinization, reducing soil fertility (Garcia et al, 2023).



40 million people

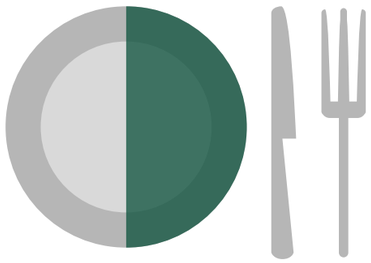
in MENA are already experiencing severe food insecurity

MENA region imports over

50%

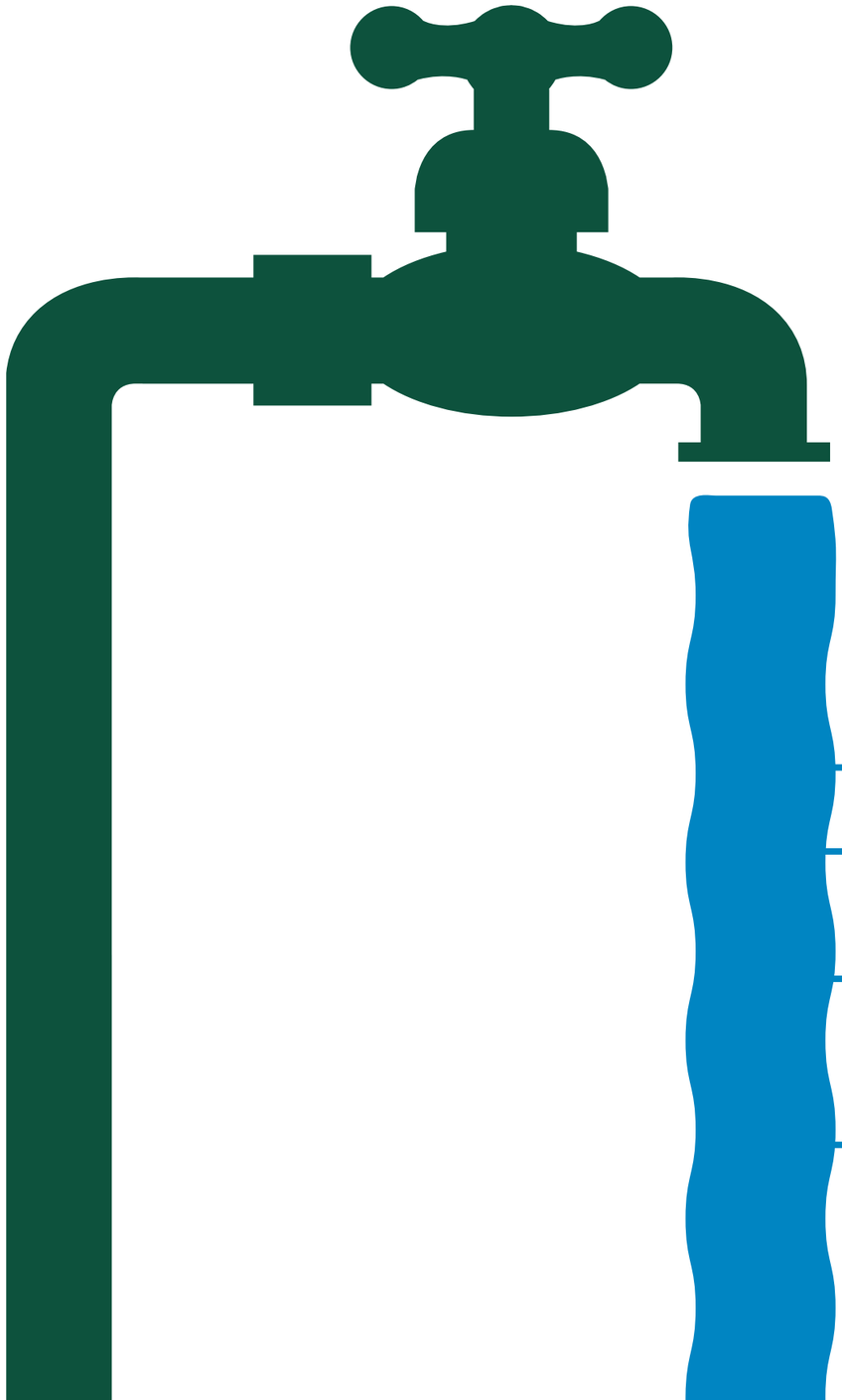
of its food.

Several Gulf countries relying **up to 90% on food import**



Conflict over resources, especially water and arable land, exacerbates hunger and poverty in fragile states (Relief Web, 2024).

THE FOOD, WATER, AND CLIMATE NEXUS



According to the UN Food and Agriculture Organization, over 60% of the MENA population already lives under high water stress, and agriculture consumes up to 85% of available freshwater. Rising temperatures, shifting rainfall patterns, and prolonged droughts are making traditional farming systems increasingly unsustainable.

More than two-thirds of land in the region is at risk of desertification (FAO, 2025). Increased desertification contributes to more frequent dust storms, which reduce sunlight for photosynthesis and damage crops (EcoMENA, 2025). 50% of Iraq's farmland has been reduced due to desertification, forcing farmers to abandon land or migrate (New Arab, 2025). Climate change accelerates this process through higher temperatures, erratic rainfall, and unsustainable land use.

Water scarcity is the single greatest threat to agriculture in the MENA region (IWMI). Refer to our Water Toolkit to learn more about water issues. It affects agriculture in various ways:

- Decreasing Rainfall: Annual rainfall could drop by 10–20% by 2050 (IPCC, 2022).
- Shrinking Aquifers: Over-extraction of groundwater is depleting non-renewable reserves in Saudi Arabia, Yemen, and Libya (Carnegie Endowment, 2024).
- Declining River Flows: Climate-induced glacial retreat and upstream damming on the Nile, Tigris, and Euphrates reduce the availability of irrigation water downstream (Carnegie Endowment, 2024).
- Droughts: Extended droughts have turned large parts of fertile plains in Morocco into dry, unproductive lands (Greenpeace, 2025).

THE LEGACY OF AGRICULTURE IN THE ARAB WORLD

Agriculture in the Arab world has a deep and enduring history that dates back thousands of years, forming the foundation of early civilization. Mesopotamia (modern-day Iraq, Syria, and parts of the Levant) first domesticated wheat, barley, lentils, and dates around 10,000 BCE (British Museum, 2019). Ingenious irrigation systems such as qanats, aflaj, and canal networks were developed to channel scarce water resources in arid landscapes, enabling communities to thrive in deserts (Lightfoot, 2000). Across North Africa and the Arabian Peninsula, farmers adapted to extreme climates through terrace farming, date palm cultivation, and rotational grazing systems that balanced human needs with ecological limits. Over centuries, Arab agronomists and scholars, especially during the Islamic Golden Age, advanced agricultural science through innovations in irrigation, soil management, and crop hybridization (Watson, 1974).

Modern Day Farming Across the Region

Many farmers in MENA are smallholders, women, and families, relying on traditional farming methods and rain-fed agriculture (ICARDA, 2025) Age, advanced agricultural science through innovations in irrigation, soil management, and crop hybridization (Watson, 1974).

Agriculture plays a large role in the health and economies of these Arab countries

THE RELEVANCE OF URBAN AGRICULTURE

Urban Agriculture/Farming is the practice of growing food and raising plants or small livestock within or around cities, rather than in rural farmland (NAL). Urban farming connects food production with urban living, turning cities into spaces that can support local food systems, community wellbeing, and environmental sustainability (Gunapala et al, 2025). Beyond growing food, it often serves social and educational purposes, teaching residents about sustainability, encouraging community collaboration, and reducing the environmental footprint of food transport. Urban farming reimagines cities not just as consumers of resources, but as active contributors to food security and ecological resilience in a rapidly urbanizing world (The Urban Farmer).

Why Urban Agriculture Matters

Food Security

Reduces dependence on imports and builds more affordable local food systems (OHPE, 2015)

Community Health

Provides access to fresh, nutritious produce and creates social connections (Langerman et al, 2025)

Health & Wellbeing

Gardening reduces stress and increases gardeners' physical and mental health (Zick et al, 2013)

Climate Action

Green spaces cool cities, reduce carbon emissions and food waste (OHPE, 2015).

BENEFITS OF URBAN AGRICULTURE

- The region's reliance on imports covers not just food for direct consumption, but also feed grains, oilseeds, processed foods, meaning much of what ends up on tables depends on global supply chains (Carnegie Endowment, 2024).
- Even partial substitution with home-grown vegetables, fruits, herbs, or small-scale grains/legumes reduces reliance on global supply chains (Pradhan et al, 2023).
- Import-reliant countries are vulnerable to global price spikes, trade disruptions, and climate-driven agricultural shocks elsewhere, which make local resilience and diversification more urgent (Greenpeace, 2025).
- Urban farming cannot replace all imports but it can improve food security, dietary diversity, and community resilience, especially in water-scarce, arid cities (USDA).
- Urban Agriculture controls stormwater runoff and reduces flood potential (Deksissa et al, 2021).
- Urban farming improves nutrition and food access by giving people (especially in low-income or marginalized neighbourhoods) the opportunity to grow their own fresh produce, which may increase access to affordable, healthy vegetables and fruits (Audate, 2019).
- Strengthening community & social bonds: gardens bring neighbours together, fostering social connections, collective work, sharing of produce, gardening knowledge, and mutual support (Pradhan et al, 2023).
- For low-income families, growing food can reduce grocery costs (Poulsen et al 2015).
- Gardens improve community health and increase the value of nearby real estate (OHPE, 2015).
- Local growing reduces the need for long-distance food transport, packaging, refrigeration, and associated carbon emissions (OHPE, 2015).
- Gardens increase biodiversity and create healthier urban ecosystems (Pradhan et al, 2023).
- Gardens improve air quality (USDA).

UNDERSTANDING THE BASICS OF URBAN AGRICULTURE

Urban Agriculture includes a wide range of activities such as cultivating vegetables on rooftops and balconies, maintaining community gardens, and using innovative systems like hydroponics (growing plants in soil-free nutrient-rich water) and vertical farming (stacking plants in layers to save space).

Rooftop Garden

Vertical Farming

Hydroponics

Community Garden

PERMACULTURE

Permaculture is an approach to agriculture and land management that aims to create self-sustaining, resilient, and regenerative ecosystems by observing and mimicking the patterns found in nature (Nature's Path, 2018). Permaculture focuses on designing systems where plants, soil, water, and people work together in mutually supportive ways. This includes practices like planting diverse crops, capturing and reusing water, composting organic waste, and using natural materials to build healthy soil (Permaculture Principles).

GETTING STARTED: HOW TO SET UP YOUR URBAN GARDEN

1

Determine Your Space & Know the Rules:
Are you building the garden on private land (i.e. school, your home) or public land that will require municipal permission?

Check: sunlight, wind, safety.

2

Source Materials:
- Soil
- Tools
- Garden Beds
- Water

3

Decide What You're Growing:
Do you want herbs, vegetables, fruits? Pick Easy, Beginner-Friendly Plants.
Start with plants that grow quickly and forgive mistakes.
Examples:

- Herbs: mint, parsley, basil, coriander, thyme.
- Leafy greens: lettuce, spinach, arugula.
- Quick veggies: radish, green onions, cherry tomatoes (with support), peppers.
- Choose plants that fit:
- Your climate (heat/drought tolerance).
- Your light: leafy greens handle partial shade better than fruiting plants.

4

Plant Seeds or Seedlings:
You can either sow seeds directly into containers, or buy seedlings (small plants) from a nursery.
General steps:

- Fill container with moist soil mix.
- Make small holes or furrows (check seed packet or plant label for depth).
- Place seeds/seedlings and gently cover roots or seeds.
- Water gently so you don't wash everything away.

5

Observe, Learn, and Expand:
The most important skill in gardening is observation: notice which plants like your space and which struggle. Adjust watering, sunlight, or plant choice based on what you see.

ACTIVITY IDEA

MAP YOUR NEIGHBOURHOOD AND IDENTIFY THREE POTENTIAL SPACES WHERE SMALL-SCALE URBAN GARDENS COULD BE STARTED

Urban Agriculture includes a wide range of activities such as cultivating vegetables on rooftops and balconies, maintaining community gardens, and using innovative systems like hydroponics (growing plants in soil-free nutrient-rich water) and vertical farming (stacking plants in layers to save space).

INCREASING FOOD SECURITY IN THE MENA REGION – THE ROLE OF THE INDIVIDUAL

Start community seed banks to share and preserve indigenous seeds

E.g: Buzuruna Juzuruna in Lebanon

Learn food preservation methods: drying, fermenting, pickling

Join food cooperatives

E.g: Social Cooperatives in Kuwait, UAE, Saudi Arabia

Advocate for community urban farming programs and workshops

Donate surplus food through local food sharing networks

E.g: Food fridges in Kuwait, Qatar, Lebanon

Start your own home/community garden

INCREASING FOOD SECURITY IN THE MENA REGION – THE ROLE OF THE COMMUNITY

Why Every Garden Matters: Connecting Small Actions to Large Outcomes

When an individual grows food, they participate in a collective shift toward localized food systems that reduce pressure on industrial agriculture. These small actions also help restore biodiversity by creating micro-habitats for pollinators and improve urban microclimates by cooling and greening dense city spaces. When many people adopt these practices simultaneously, the cumulative impact becomes significant: neighbourhoods become greener, communities eat more fresh produce, and awareness around sustainable living increases. In this way, every small garden becomes part of a much larger movement toward resilience, climate adaptation, and community well-being.

Youth Role Models in Community Farming and Sustainability

Across the Arab world, young people are emerging as powerful leaders in sustainable agriculture and community farming. From rooftop hydroponics projects in Cairo to community seed-saving initiatives in Morocco and youth-led composting programs in Lebanon, young innovators are demonstrating how creativity and determination can transform food systems. These youth role models not only grow food, they also raise awareness, organize workshops, build community gardens, and advocate for policy changes that support urban agriculture and environmental justice. Their work shows other young people that sustainable farming is not just a rural or traditional practice but a modern, dynamic field where youth leadership is essential.

Learning from Traditional Arab Agricultural Wisdom

The Arab region holds a rich heritage of agricultural knowledge that remains deeply relevant today. Practices were built on principles of efficiency, community cooperation, and respect for the land. Many align closely with modern sustainability and permaculture concepts, showing that climate-resilient agriculture is not new to the region but deeply rooted in tradition. By reconnecting with these ancestral methods, youth today can blend cultural heritage with modern innovation to create farming systems that are both ecologically sound and culturally meaningful.

ACTIONABLE ITEMS

- **Create community gardens in underused spaces**
- **Partner with schools and NGOs for urban agriculture projects**
- **Knowledge-sharing from elders to youth and inexperienced gardeners**

INCREASING FOOD SECURITY IN THE MENA REGION – THE ROLE OF POLICYMAKERS

1. **Introduce policies that support localized food systems**
2. **Introduce policies that support urban agriculture projects**
3. **Invest in green infrastructure and urban agriculture spaces**
4. **Provide grants and microloans for youth-led projects**

THE ROLE OF YOUTH

Youth play a vital role in urban farms by providing essential labor, creative energy, and new ideas that help projects grow. By participating in planting, harvesting, outreach, advocacy and planning, young people gain hands-on experience with sustainable agriculture, environmental stewardship, and community engagement. Beyond physical work, youth increasingly engage in advocacy for food justice, community outreach, and even business development linked to farm produce, helping ensure access to fresh food in underserved areas (Sustainability Directory, 2025). Their involvement also fosters leadership, collaboration, and problem-solving skills, while connecting them more deeply with nature and improving mental well-being.

Policymakers can engage youth in urban farming by creating supportive environments that make participation accessible, meaningful, and empowering. This includes integrating urban agriculture into school curricula, establishing school gardens, and offering hands-on training that builds practical skills.

HOW CAN URBAN AGRICULTURE SUPPORT YOUTH DEVELOPMENT?

Urban farms provide meaningful opportunities for young people to build leadership skills, where they learn collaboration, communication, and creative problem-solving. These projects often integrate principles of sustainable development, allowing youth to engage in environmentally responsible, socially equitable, and economically supportive practices that benefit both their communities and the planet.

Youth often face practical barriers that limit their participation in urban farming, including transportation challenges, limited funding, and a lack of training. These obstacles can be addressed by providing accessible transportation options such as bus passes or carpools, securing grants or donations to support youth-led programs, and offering workshops and mentorship to build their skills and confidence.

Traditional Knowledge Revival

Reviving traditional agricultural knowledge gives youth a chance to connect with their cultural heritage while learning time-tested techniques for growing food in challenging environments. Family gardens, once central to daily life in many Arab communities, also provide practical examples of how previous generations managed soil, water, and seasonal crops with limited resources. When youth engage with these traditions, they gain a deeper understanding of both their identity and sustainable food practices, empowering them to build on wisdom that has supported communities for centuries.

Bridging Past and Future

Youth are uniquely positioned to blend traditional agricultural wisdom with modern innovation, creating solutions that are both culturally grounded and environmentally sustainable. Techniques such as composting, polyculture, and water-efficient irrigation can be enhanced through green technologies like solar-powered pumps, hydroponics, vertical farming, and digital monitoring tools. This integration allows young growers to address contemporary challenges such as water scarcity and limited urban space while honoring methods that have been effective for generations.

CAREERS IN URBAN AGRICULTURE

The Growing Green Jobs Sector: From Agri-Tech to Sustainable Design

As cities shift toward sustainability and climate resilience, the demand for green jobs is rapidly expanding, creating new career pathways for youth in urban farming and related fields. Opportunities now span agri-tech, renewable energy, urban design, waste reduction, and sustainable food systems. Urban farming is no longer limited to traditional gardening, it intersects with technology, engineering, and social innovation, offering young people exciting roles in shaping the future of food. With governments and industries investing in climate solutions, youth entering this sector find themselves at the forefront of meaningful, future-oriented work that benefits both communities and the environment.

Youth Entrepreneurship Opportunities: Incubators, Funding, and Innovation Hubs

Urban farming offers powerful opportunities for youth entrepreneurship. Innovation hubs, business incubators, and start-up labs across the region are increasingly supporting young people in developing products and services related to sustainable agriculture such as hydroponic kits, composting solutions, rooftop farm designs, and eco-friendly food businesses. Access to micro-grants, seed funding, and mentorship networks gives youth the resources they need to turn ideas into viable enterprises. This entrepreneurial environment empowers youth not only to participate in the green economy but to lead it.

Potential Green Jobs

Communications Specialist

Agriculture Engineer

Environmental Educator

Urban Horticulturist

Municipal Council Member

Sustainability Officer

Farmer

NEXT STEPS

1 A Regional Vision for Food Security and Ecological Balance

Achieving long-term food security in the Arab region requires a vision that balances human needs with environmental sustainability. This means building food systems that are locally resilient, water-efficient, climate-smart, and rooted in ecological principles. By integrating traditional knowledge with modern innovation, cities and communities can reduce dependence on imported food, strengthen local production, and restore degraded landscapes. A regional vision for ecological balance prioritizes soil health, biodiversity, and sustainable water use, ensuring that future generations inherit a region capable of nourishing both people and the planet. Urban agriculture becomes a central part of this vision, an accessible, scalable tool for improving food access while reducing harm to the environment.

2 The Collective Power of Arab Youth to Transform Cities

Arab youth hold immense potential to reshape their communities through creativity, leadership, and a deep commitment to climate action, young people represent a powerful force for transformation. Whether designing rooftop gardens, leading composting programs, launching eco-startups, or advocating for urban green spaces, youth are already demonstrating how small initiatives can spark major social and environmental change. Their energy and innovation can turn densely populated cities into thriving hubs of urban agriculture, sustainable design, and climate resilience. When empowered with resources, skills, and supportive policies, Arab youth can lead a sustainability movement that strengthens both local communities and the region's environmental future.

3 The Time to Plant the Seeds of Change is Now

The challenges facing the Arab region such as climate change, food insecurity, water scarcity, and rapid urbanization, make action not just important but urgent. Every year of inaction allows these pressures to intensify, while every step taken toward sustainable urban farming creates opportunities for healthier communities and a more resilient environment. Planting the seeds of change means starting where we are, with the tools and spaces available, and believing that local actions can inspire regional transformation. By acting now, individuals and communities can build momentum toward a greener, more secure future, ensuring that the next generation inherits a region capable of thriving despite environmental challenges.

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The Arab Youth Center (AYC)

The Arab Youth Center (AYC), led by HH Sheikh Theyab Bin Mohammed Bin Zayed, Chairman of the Crown Prince's Court and AYC, aims to empower young Arabs and address their needs. The Center offers a unique platform to develop youth capabilities and support innovation and creativity among youth. AYC implements purposeful initiatives across diverse sectors, in addition, it conducts research on young Arabs to help decision-makers shape policies that enable their progress.

arabyouthcenter.org

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The Arab Youth Council for Climate Change (AYCCC)

The Arab Youth Council for Climate Change (AYCCC) aims to achieve a qualitative leap in the interaction of Arab youth with environmental issues, support youth climate action, and engage young Arabs in developing innovative and sustainable solutions to the climate change challenge.

climate.arabyouthcenter.org

ABOUT THE AUTHOR

Mariam AlSaad is an environmental educator and community organizer with over four years of experience advancing urban agriculture, food security, and climate education through hands-on, community-based programming. She has extensive practical experience managing community gardens, including crop planning, soil health, seasonal maintenance, and volunteer coordination, with a strong emphasis on organic and sustainable growing practices.

As Co-Founder of the Skov Park Community Garden in Guelph, Canada Mariam designs and delivers inclusive urban agriculture programs that builds environmental literacy among youth and community members. Mariam is also the Founder of AlManakh: a climate action nonprofit organization dedicated to increasing climate awareness in Kuwait, through research, education and community engagement.

Mariam is a Council Member & Communications Officer for the Arab Youth Council for Climate Change. She holds a Master of Science in Sustainable Cities and is committed to using urban agriculture as a tool for community resilience, education, and environmental justice.

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FOR A SUSTAINABLE FUTURE LED BY YOUTH