Knowledge-Sharing amongst South Asian Regional Renewable Energy Associations and Networks

Workshop to initialise a South Asian Network for Clean Energy

A presentation by

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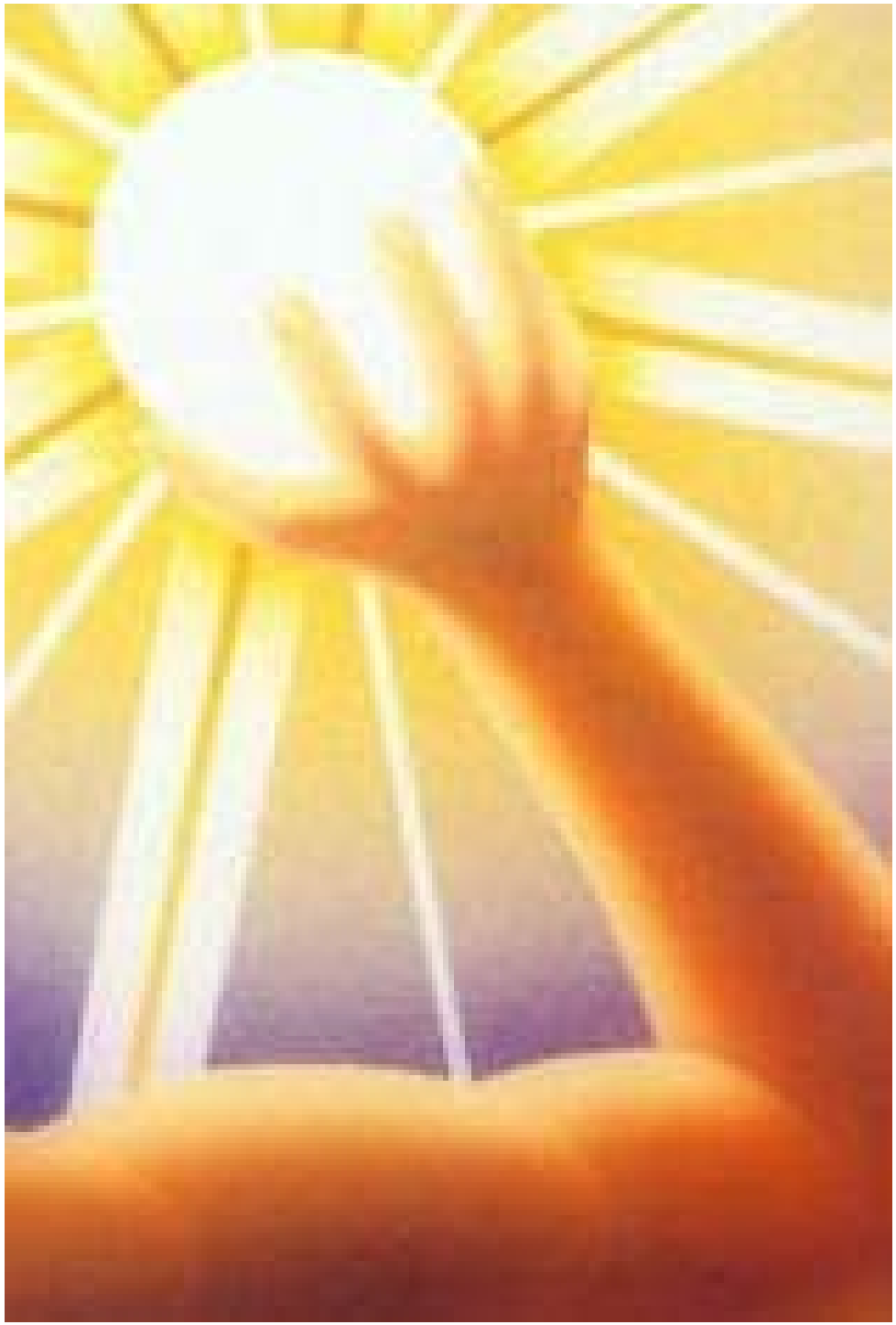
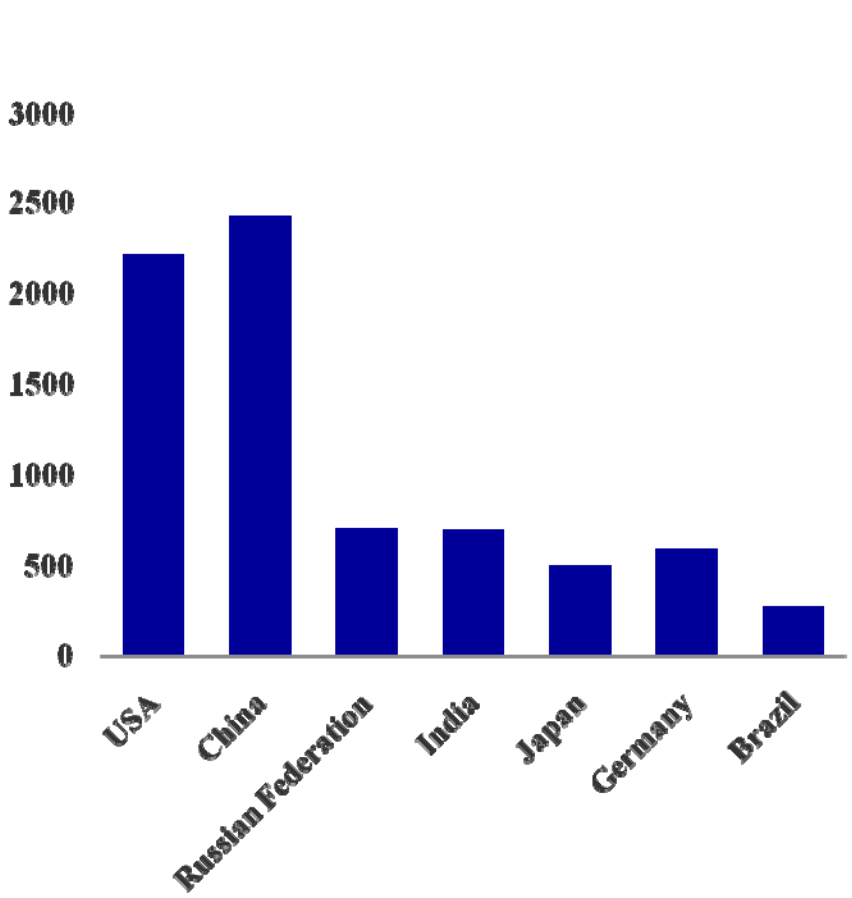
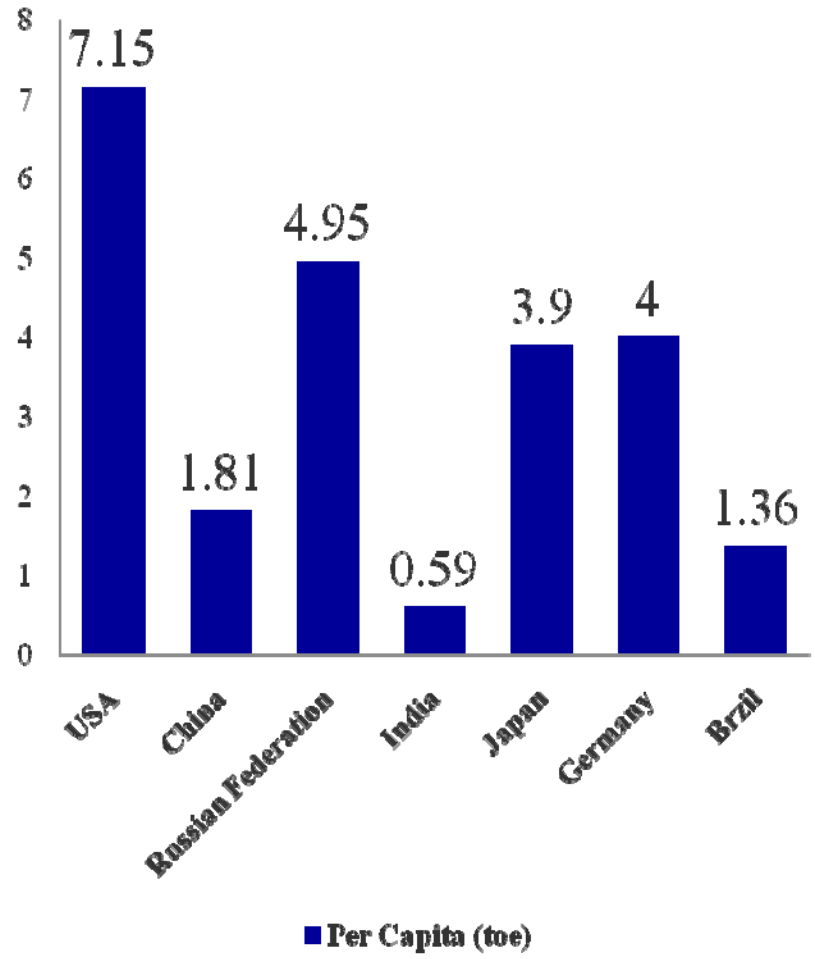


Where India stands – energy demand (mtoe)





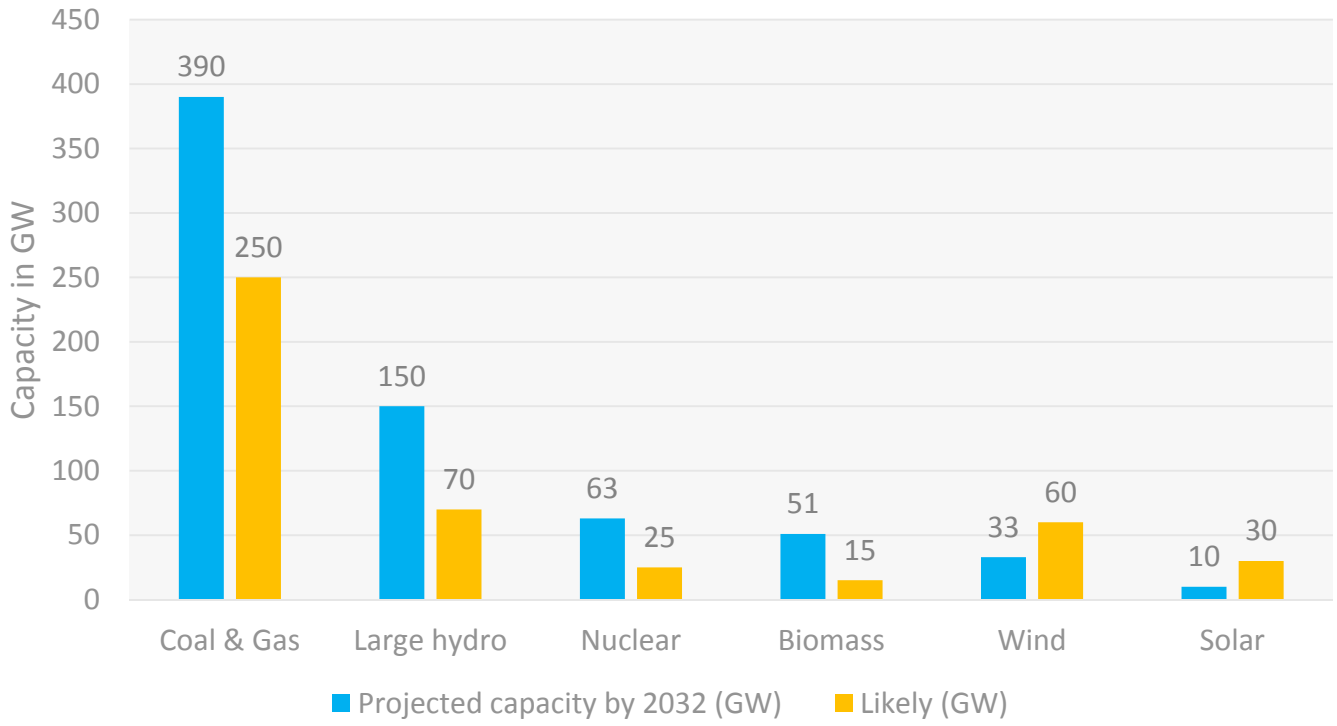
Source:IEA key energy Statistics 2012

Energy challenges for India

Rising energy demand	• 6-7% year • Can we reduce? • Can we build thermal/nuclear/large hydro capacity? • What happens if we can't?
Energy security	• > 80%/90% import oil dependence • 40-50% coal import dependence/cost • Can we mortgage?
Import costs/CA deficit: budget subsidies	• Can we afford?
Access to energy	• 45% households without access - can we deny?
Low energy consumption	• Can we keep it so low?
Climate change	• Although India's share is only 5% of global emissions – but increasing global pressure

Hence, renewable energy is important

Capacity Projections for 2032 by IEP



In long run by 2050, we are now thinking of 100 GW each of solar and wind and 20000 Biomass through dedicated energy plantations

Source:IEA key energy Statistics 2012

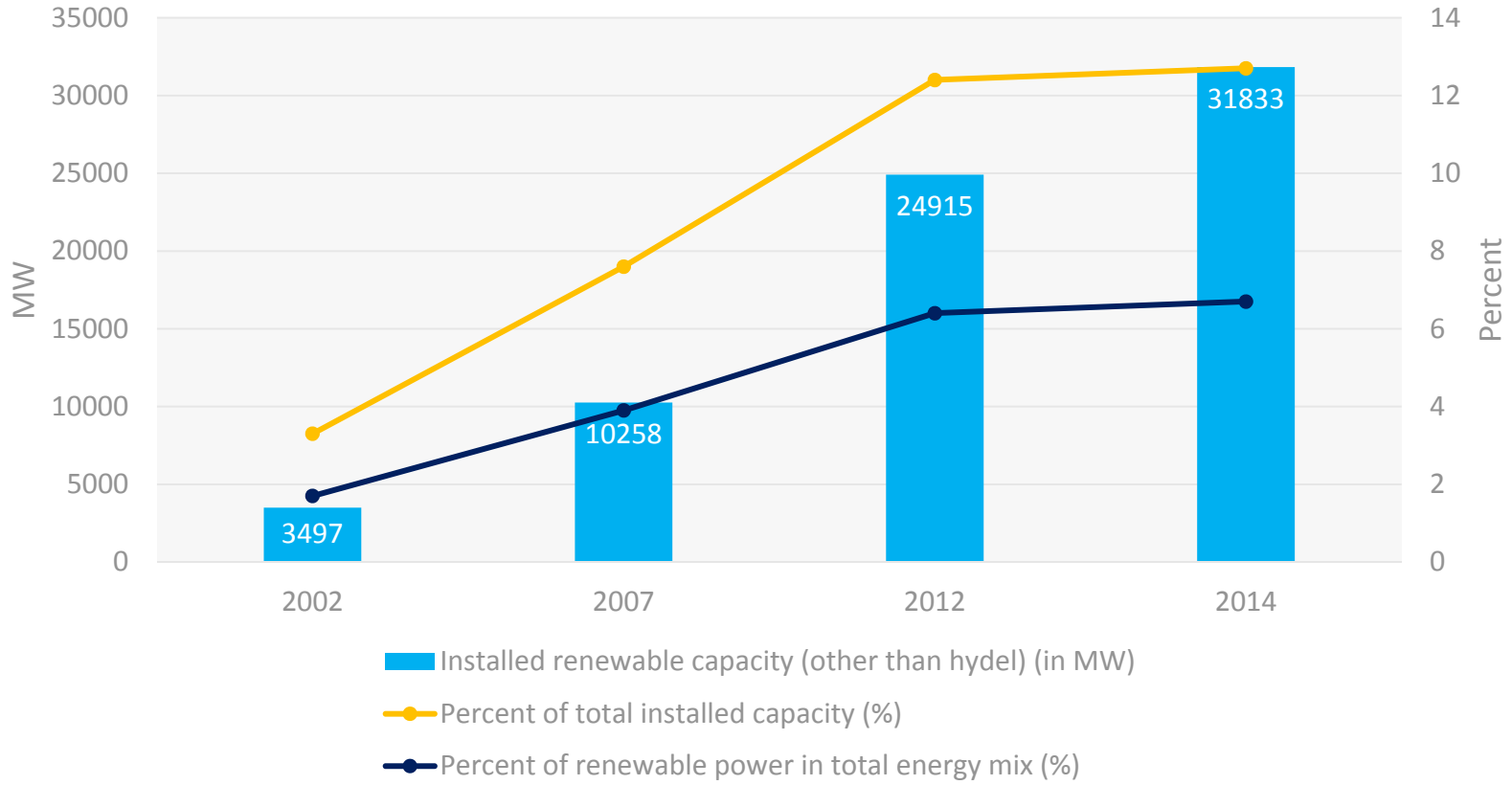
What then are the messages?

- Energy Demand reduction by
  - energy conservation
  - energy efficiency
  - green buildings
- Oil reduction (in transport) and in uses for power (diesel)/lighting (kerosene) etc.
- Also reduce subsidies
- Must maximize electricity from renewable energy sources
- Must provide energy access through renewables

Why renewable energy?

- Renewable energy resources are being replaced / generated at the same rate that they are being utilised. Hence they will last indefinitely .
- Resources are indigenous – contribute to energy security
- Good for the environment both locally and globally – clean energy
- Increase modern energy access to rural, isolated and low income populations
- Can be utilized in decentralized, distributed manner and meet these needs
- Creates employment and income
- Low gestation period
- Will help keep tariff reduced in future

Rapid growth of renewable power



NACPP wanted 15% of generation by 2020 - could be by 2030. Plan maybe 100 GW each of solar/wind by 2050

Grid-connected renewables – challenges and approach

Problems

Infirm power- how to handle it particularly when volumes are created

- Scheduling/grid interaction – how to maintain grid stability
- Renewable energy is not uniformly distributed- how do we transfer
- Cost on power evacuation infrastructure- how do we support, where from funds
- Issue of pass over of tariff - how to share it equitably
- Resource assessment - much more detailed required
- Need for Solar parks

Financing renewables

- Cost of funds too high
- Not enough funds available
- Banks/financial institutions need assurances
- Instruments need change e.g. risk guarantee fund – longer duration debt.

Energy access → Importance

- Electricity access is an important input factor for human development-expands his set of capabilities
- Energy poverty worse than income poverty
- Positive impact on health and education
- Important for livelihood improvement
- Necessary for better quality of life

Currently 40% people in India denied-not much change expected in numbers by 2030

Energy access → Challenges of grid

- Historically, focus on grid extension for providing electricity access
- Said that > 90% villages electrified (definition problem)

  Yet number of rural households getting reliable electricity is not declining
- Utilities have no incentive to provide electricity to villages as :
  - delivered cost is higher - increases by Re 1 /kWh/km
  - low recovery
  - free or poor tariff – financial situation is very bad
  - supply more – lose more
- Supply constraints
  - Grid power shortage
  - Consumed elsewhere – in urban areas
  - Villages first to get power cut-hence either no supply or unreliable supply

Alternative solutions are necessary

Energy access | Other challenges

- Costs still high - solar panel costs declined but battery/transaction costs high
- Limited ability to pay – essentially kerosene replacement cost
- Limited commercial loads
- Return not enough for investors
- Inadequate subsidy support (30%) or structures not correct (DDG)
- Banks not lending
- Where are the entrepreneurs?
- Funds not available
- Organisational problems
- Absence of technical capacity
- Threat of grid

How then to find a business model, entrepreneurs, funds??

Energy access → Possible solutions

- Can there be local entrepreneurs? SHG's?
- Have neither 90% of DDG nor 30% of MNRE – maybe about 70% - need to really find out
- Bank finance limited – must be ensured – low interest?
- Tariff raises everywhere essential
- Build Capacity of EPC teams to instal
- Train entrepreneurs/technicians
- Find CSR/Foundation funds for doing 10000 villages (or 1 million households) in next 3 years – to set the stage
- Can funds from the so called Climate Fund be provided?

Rural cooking energy problem

- 2.7 billion people globally, 700 million in India
- Lancet Global Disease Burden 1990-2010 estimates 3.5 million deaths annually – a higher estimate than before in India
- IAP India's biggest health hazard – tobacco/BP to follow
- 500 million cases of illness - other adverse health impacts

BUT

- Little policy response – globally or nationally
- Little societal or even gender advocacy

Programme of 150 m stoves

- Saving of 95 million T of wood/6 million T of coal
- Reduction of
  - 4% in India's total GHG emissions
  - 1/3rds of annual human black carbon emissions
- Collection issues (mostly women)
  - Average monthly time - 41 hours
  - Average distance travelled - 30 km
- Substantial time saved in cooking
- Health benefits

Rural cooking energy problem → Policy challenges

- Lack of awareness of impact amongst all
- Difficult to shift away from traditional practices
- Focus of policy on LPG – but unsuccessful – too many barriers
- Absence of acceptable stoves – no ecosystem – relatively easy availability of biomass – which is free (largely)
- Worry about the problem being too difficult to resolve
- How to fund?

Rural cooking energy problem → Improved stove required

- Doubling combustion efficiency – will reduce substantially
  - Smoke emission/particulate matter
  - Quantity of fuel used (hence collection time)
  - Cooking time
- Many such stoves approved meeting new stricter standards
- Durability not satisfactory 1-2 years
- We need stove which:
  - Are forced-draft for better efficiency
  - Have life of 5 years
  - Generate own power for fan and a small light
  - Cost at scale not more than Rs 2000 (preferably 1500)
  - could use all fuel

Rural cooking energy problem → Financing of programme

- Scale cost – Rs 2000. Subsidy 1000. Beneficiary 1000
- 100 million stoves over 10 years
  - Rs 10000 cr subsidy / Rs 1000 cr awareness etc
- Money to come from
  - National Clean Energy Fund
  - Savings in subsidy for kerosene/LPG
  - International Funding half grant and half low interest loan
- Carbon market 1 stove – 1.5 CER per annum * 5 . If CER = 7 Euro then Rupee earnings per stove become 7.5*7*80 == Rs 4200 – all costs can be met!
- Carbon market crashed – Can it be resurrected or WB have marketplace for voluntary gold standard?

THIS IS THE CHALLENGE FOR INTERNATIONAL SYSTEM – for POVERTY EMISSIONS

Rural cooking energy problem → Transformational impact

- Imagine market of 10-15 million stoves annually in India or triple that globally – manufacturing (assembled locally) and distribution (and ecosystem of lighting)
- More time for women to spend with family
- Considerably reduced health effects
- Much cleaner environment in house along with replacement of kerosene lantern with solar light – better lighting; children studying more; life lively in village after dark including open shops; maybe some TVs

Agricultural pumpsets

- There are over 20 million agricultural pump sets in India
- Irrigation pumps used in the agriculture sector account for about 25-30% of electricity consumption in India, and over 50% of subsidy/losses
- Large number run on diesel
- Should have programme of several million solar pumps over a decade – with lowering subsidy and enabling lower costs.
- A special fund needs to be created
- To be given to women's SHGs of marginal farmers
- Use for vegetable production through drip irrigation

Thank you

NSEFI Introduction

Who we are

- National Solar Energy Federation of India is a public trust founded in 2013 based in New Delhi, India.
- Umbrella organisation of solar project developers, manufacturers, financing institutions, engineering companies and many other industry stakeholders.

Mission

Voice of solar	Advocacy	Awareness
• To become the voice of Indian solar energy industry	• To advocate solar-friendly policy-making	• To spread knowledge about solar energy

Prominent members

Refex Energy	SunEdison	Hero Future Energies	Hindustan Clean Energy
Jakson Engineers	Vikram Solar	Atha Group	Su-kam Power Systems
Swelect Energy	Elcomponics	Aditya Birla Group	Acme Solar
SunPower	Waaree Energies	Juwi India	Nexgen Financial Solutions

NSEFI Introduction

What we do

- Make policy recommendations
- Organise events
- Raise issues which impact Indian solar industry
- Participate in events like these
- Spread knowledge through workshops and meetings